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The Rockefeller University

news & notes

June 24, 1994 Volume 4, Number 32

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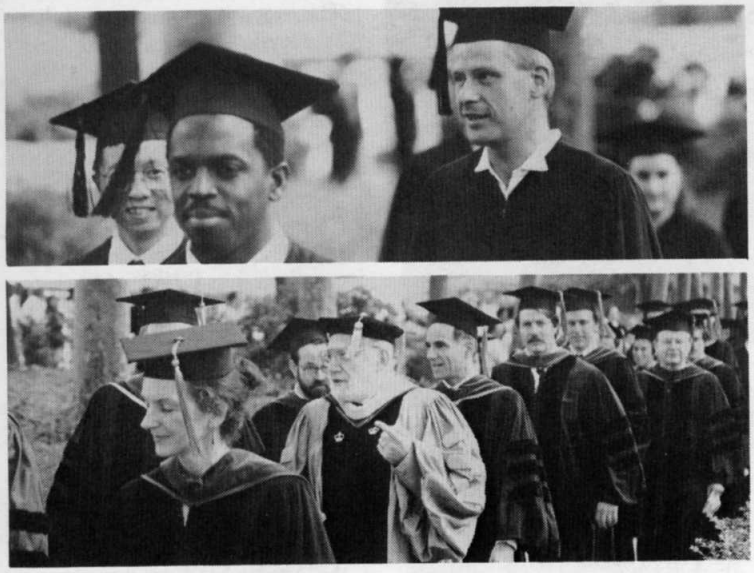


Commencement begins with a march up the 66th St. drive.

University holds 36th commencement

Awards 25 Ph.D.s and 2 honorary degrees

Amid splendid regalia and the summery sounds of a brass quintet, Rockefeller University awarded 25 doctor of philosophy and two honorary doctor of science degrees at the 36th commencement, held on June 16.

A procession of faculty, students, trustees, and honorary degree recipients, their black robes adorned with a rainbow of academic hoods, began the ceremony with a stately march up the shady 66th St. drive. Once family, friends, and graduates were seated inside Caspary Auditorium, research advisors described their students' accomplishments and sometimes, their eccentricities, expressing by turns wonder, pride, gratitude, and sorrow at their departure. The students doffed their mortarboards and bowed to receive their gold and blue hoods. Although many of the graduates are bound for laboratories and post-docs, nine are continuing on as students, to complete medical degrees.

After President Wiesel presented the diplomas and recited the rites of investiture, the degree of doctor of science honoris causa *was awarded to two men: Tsung-Dao Lee, the theoretical physicist and Nobel laureate from Columbia University, and Louis Julius Hector, a Rockefeller trustee emeritus and chairman of the Lucille P. Markey Charitable Trust, a foundation that supports basic biomedical research.* See pages 3-7 for highlights.

Hospital wins $27 million grant from NIH

The National Institutes of Health has awarded the Rockefeller University Hospital a $27 million grant that will aid the work of more than 120 university investigators over the next five years. The grant is 24 percent larger than the award made in 1988 and is the largest the NIH has made to any of the 75 clinical research centers it funds.

Speaking at a reception to celebrate the grant, President Torsten Wiesel said, "The Hospital has been an integral part of this institution from its beginnings in 1910 and this grant will help ensure that it remains a vital component of the university."

Jules Hirsch, physician-in-chief at the Hospital, said, "The grant increase is an unusual affirmation of NIH support for clinical research in general and the RU Hospital in particular. It comes at a very difficult time for NIH, when the government has mandated a small 3.5. percent increase in its budget. That makes our increase all the more significant."

The grant also reflects the increased scope and volume of clinical research at Rockefeller, added Richard Galbraith, medical director of the Hospital: "We have more investigators, more studies, and higher-tech procedures than before." Several of these researchers made presentations when NIH representatives came for a site visit during the application process; among them were Professors Jan Breslow, Mary Jean Kreek, and Ralph Steinman; Adjunct Professor Ronald Crystal; Associate Professors Gilla Kaplan and Rudolph Leibel; and Assistant Professors Naomi Fukagawa and James Krueger .

Over the next five years, the grant will provide more than $5 million per year for about 100 experimental protocols to be carried out in approximately 1,000 patients, with an additional 4,000 people participating on an outpatient basis. Galbraith said, "We go to extraordinary lengths to safeguard the environment of patients. Stringent standards of care are required for clinical research, and this grant will support the infrastructure that makes it possible."

The Hospital has been continuously funded by the government for over three decades now. The NIH's National Center for Research Resources has designated the RU Hospital as a General Clinical Research Center (GCRC), devoted to scientific elucidation of diseases and treatments; it is the only Center that is not part of a regular hospital.

Grant to support wide-ranging medical agenda

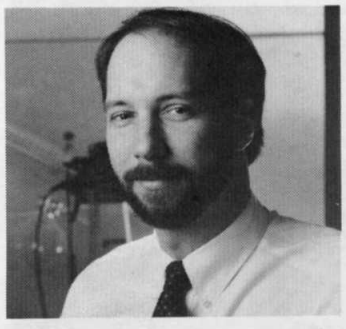
The investigations to be carried out under the auspices of the grant include: study of the relative effects of heredity and diet on heart dis-

See ***Hospital****, page 2*

Trustees endorse academic plan, promote Sakmar, and approve new junior and senior faculty appointments

On June 16, the Rockefeller Board of Trustees voted its approval for a far-reaching academic plan charting the university's future (see story on page 2). The board also approved several senior and junior faculty appointments and promoted Thomas P. Sakmar to associate professor. Finally, the board approved the university's operating and capital budgets for the new fiscal year.

Sakmar, who came to Rockefeller as an assistant professor in 1990, is an assistant investigator of the Howard Hughes Medical Institute. He received an A.B. in chemistry from the University of Chicago in 1978 and continued there at the Pritzker School of Medicine for an M.D., which he earned in 1982. After an internship and residency at Massachusetts General Hospital, he studied biology and chemistry at MIT. In his Rockefeller laboratory, the vertebrate visual proteins rhodopsin and transducin serve as a model system for structure-function studies on the molecular mechanisms of transmembrane signaling.



Thomas P. Sakmar was promoted to associate professor at the June 16 meeting of the RU Board of Trustees.

Academic plan charting RU's course approved by trustees

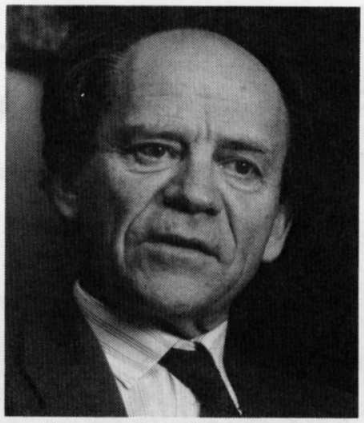
At its June 16 meeting, the board of trustees enthusiastically endorsed an academic plan aimed at ensuring Rockefeller's vitality as it nears its centennial in 2001.

The Report of the Academic Plan to the Board of Trustees is the product of a year-long collaborative effort of the faculty, board, and administration. Initiated by the board, it is based on an assessment of Rockefeller's strengths and needs and is intended to guide rational choices to maintain and enhance the university's mission.

"The plan sets our scientific and educational goals as we continue our commitment to pioneering research in the natural and medical sciences," President Torsten Wiesel said. "We have identified areas of research that are especially ripe for development at the university, and that will guide recruitment of new faculty. The plan's implementation will require additional financial support, and the board has approved allocation of new resources to realize our goals. Moreover, a major advantage of an integrated plan is that it will help us articulate our case to foundations and private supporters."

The plan recommends building and strengthening the autonomous lab structure of RU by focusing on areas of scientific and medical importance. There are six specific recommendations: maintain the 70 current labs and slowly expand to 80-100 labs as resources become available; reaffirm the place of chemistry and physics in the university's overall research program; renew the commitment to clinical research and the Hospital; support a strong graduate program; explore the formation of interdisciplinary centers; and over the next three years, seek 10-15 heads of lab in areas that will enable the university to continue making pioneering contributions.

The process of making these recommendations began at the June 1993 meeting of the board. Wiesel then invited all faculty—from assistant to emeritus—to join groups examining chemistry, cell and developmental biology, microbiology and immunology, medical sciences, neurosciences, and physics. Co-chaired by two tenured faculty, the groups were asked to set sights high and to formulate an agenda that would guide current search efforts.



Torsten Wiesel presented the new academic plan to faculty on Mon., June 13.

The groups met with the board of trustees five times to discuss academic and funding issues, and in March, the trustees favorably received a preliminary proposal.

"The planning process we've just completed augments the rejuvenation of the university. We are expanding, recruiting, and refining, and our trustees as well as the faculty have been most helpful as we set our priorities," said Wiesel.

Copies of the plan may be obtained from Ingrid Reed, x8082.

Chair, four new members elected to Academic Council

The executive committee of the Academic Council elected Professor Emil Gotschlich as its new chair on June 21. New members of the committee, which represents the faculty on matters of interest to the university, are Professors Jan Breslow, Charles Gilbert, and Peter Model. Other current members are: Professors David Gadsby, Konstantin Goulianos, Mary Elizabeth Hatten, Nathaniel Heintz, and John Kuriyan. The three departing members are Professor David Luck, former chair, and Professors Günter Blobel and Vincent Fischetti.

Associate Professor Sanford Simon was elected by the junior heads of lab to represent them on the Academic Council, replacing Associate Professor Alan Aderem. Simon joins Assistant Professors Ulrike Gaul and Michel Nussenzweig.

TheAcademic Council is composed of twelve faculty members, nine senior and three junior heads of lab. Members serve three year terms.

Hospital grant

(continued from page 1)

ease; treatments of skin lesions due to psoriasis; the effect of thalidomide on alpha interferon production in acute cases of TB; study of the relationship between obesity and how the body stores and uses energy; the relationship between nutrition and cancer; examination of the contribution to cocaine addiction of imbalances in brain chemistry; determination of the therapeutic efficacy of cytokines in delaying AIDS in HIV-infected people; testing gene therapy in alleviating the symptoms of cystic fibrosis; and analysis of protein turnover in aging.

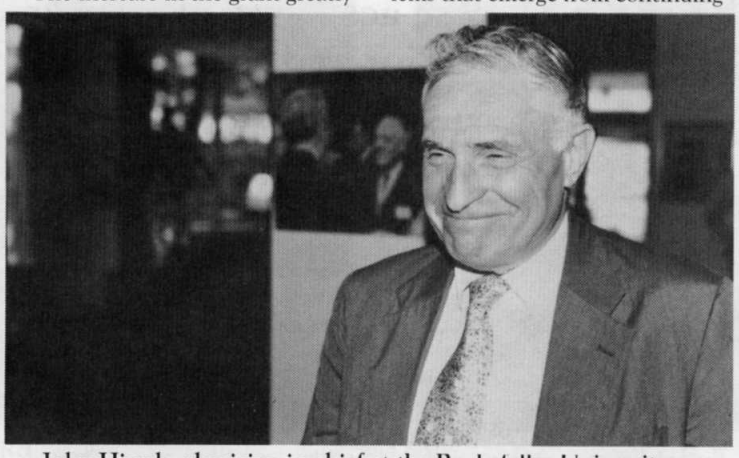
The grant will refurbish extant facilities for such patients and the studies that serve them, and will be used to build necessary new facilities, such as a procedure suite equipped for bronchoscopies, colonoscopies, biopsies, and gene therapy. Most of these studies require specially controlled environments. Research with cystic-fibrosis genes, for example, must be conducted in "negative pressure rooms"—laboratories that are ventilated so that air is sucked in when the door opens, precluding the escape of any possible stray viral vectors carrying the genes. An opposite barrier system may be needed for immunocompromised patients, such as those with AIDS, who are prey to infection and must be quartered in rooms that minimize the entry of bacteria.

"Regular hospitals today can not afford to keep patients solely for research purposes because they need insurance reimbursements. But with this grant, we can continue to do clinical research for and with patients," Hirsch pointed out.

The increase in the grant greatly reduces the university's subsidy to the Hospital's operation. But as generous as the grant is, the total budget for hospital-based research in the next five years far exceeds $27 million: much of the additional need is supported by individual investigators' grants.

The Hospital also supports physicians who wish to begin a research career. Such training is critical to solving America's health problems, Hirsch asserted. "The generation of new scientific problems that emerge from continuing medical dilemmas will never stop. New York City is troubled with AIDS, antibacterial resistance, and TB. Nationwide, there's an increasing rate of malignancies—of the breast, colon, and skin. There's an epidemic of obesity and addictive behavior. All of these are being addressed by clinical researchers at the Hospital."

Leif Carlsson



Jules Hirsch, physician-in-chief at the Rockefeller University Hospital, accepted congratulations on the five-year $27 million grant from the NIH at a university-wide celebration on June 14.

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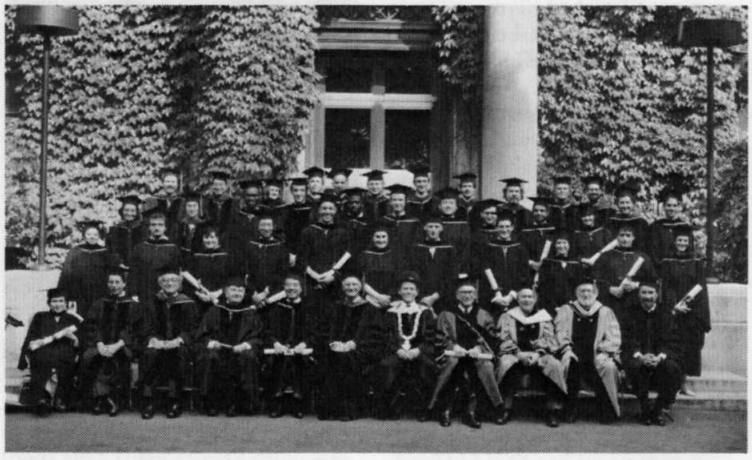
Commencement highlights: advisors present graduates, one by one

Following are excerpts of advisors' remarks about their students made at The Rockefeller University's commencement ceremony, June 16. Degrees were awarded in absentia *to: Mark Joseph Benedyk, John D. McKinney, Andrew J. McW. Millar, and Mary Beth Moorefield.*

John Sholtis



***In step with tradition*: The Rockefeller University class of 1994 comes together before Founder's Hall.**

Thomas Akompong

Thomas Akompong graduated from the University of Ghana in 1985, and came to the United States to study biochemistry at Meharry Medical College in Nashville, Tennessee. Tom came to Rockefeller in 1988, on a recommendation from Dr. Joseph Gally, a Rockefeller alumnus and faculty member at Meharry, who recognized in Thomas special promise.

A description of Thomas includes words such as "intensity" and "passion," which describe his manner whether he is talking about his favorite scientific topic, G proteins and signal transduction, or his favorite topic outside of science—sports.

As to science, G proteins are a kind of currency within a cell by which signals are passed from the outside to the inside. Tom's thesis work characterized a novel mechanism by which a certain type of G protein transmits signals that stimulate immune cells to divide. Because he was using immune cells, Tom also took a look at the immunosuppressive and antiinflammatory effects of stress steroids like cortisone, and he showed that his mechanism is involved with these important and useful actions.

Tom is now a postdoctoral fellow at the Harvard School of Public Health trying to apply his skills to the study of Cooley's anemia and related disorders.

—Bruce S. McEwen

Ethan Benardete

Ethan came to our lab from Harvard, filled with the desire to use mathematics to explore the intricacies of the brain. He had a real craving for mathematics. He was always running down to NYU to take more math classes, and more—to the chagrin of the Dean's Office, which had to pay for them. Ethan used his mathematical skills to develop an improved method for stimulating the visual system, a method which can measure not only the simple, linear portion of the neural response but can also detect complicating nonlinearities. His method is certain to be useful to other researchers in neuroscience. Ethan's thesis research has provided a detailed catalog of the temporal properties of primate retinal ganglion cells, and has uncovered several features that eluded previous investigators. This discovery deepens our understanding of the retina, and will guide future explorations.

Ethan's methodical experimentation and rigorous data analysis served as shining examples to new students, who were immediately told to emulate his style rather than mine. After receiving his Ph.D. he is continuing his medical education, and he is sure to bring to medicine the same creative thoroughness that has marked his work on the brain.

—Ehud Kaplan

Joel N. Blankson

The question that Joel addressed, with ingenuity and creativity, is one central to the regulation of the immune system. During development of the immune system, T cells can rise that have the potential to react with the body's own normal components. If these T cells are not silenced in some way, autoimmunity—self-attack by the immune system—will occur. It has not been clear whether the T cells can really be turned off or are just selectively killed. Joel ingeniously employed a mouse transgenic for a specific T cell receptor, so that most of its T cells essentially are a single clone, and he was able to prove that the mature T cells are indeed turned off. He also made the surprising discovery that the superantigen behaved differently in this respect from ordinary antigens, which has implications for treating autoimmune disease and infections.

From the outset, there was always Joel's clarity of thought and his strong sense of independence as he designed and executed his elegant experiments. As a matter of fact, he was so fiercely independent that I learned to feel gratitude on those rare occasions when he offered to let me inoculate his mice. Joel reserves his passion for science, the Knicks, and the music of Jimi Hendrix. I leave it up to him to decide in what order they fall, although I can attest to his many long hours in the lab.

Joel now returns to Cornell to complete his M.D. requirements. He plans to specialize in infectious diseases, an interest that it pleases me to think was kindled here at The Rockefeller.

— Stephen S. Morse

Marcia Simpson Brose

I hope that Marcia will forgive me a few things during this short talk. She may fear what I may say about her life in the lab, which was not always easy. Life in the lab is even more difficult after a no-fault career as an undergraduate student and as a medical student. Indeed, experiments do not always behave as expected, and their outcome may be problematic for months...or years.

I remained positive and optimistic about Marcia's thesis during this time, and the results that finally came out of her work have exceeded even my most enthusiastic expectations. In the last six months of her stay, Marcia has used all the knowledge accumulated over the past four years to perform a series of beautiful and elegant experiments which have changed our understanding of the very early stages of patterning of the embryo. This work implied a complicated planning, a very sophisticated genetics, and its interpretation was difficult. But we have now completed one of the papers I am the most proud of.

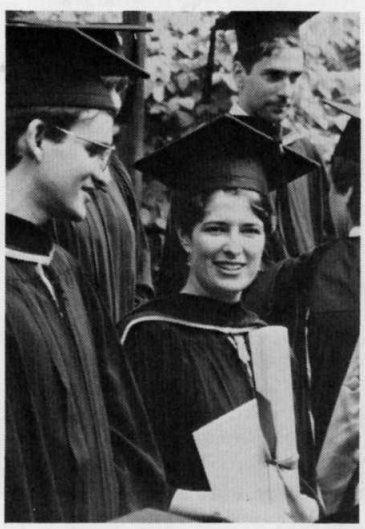
So, as we say, "à vaincre sans péril, on triomphe sans gloire," which translates as "the one who wins a battle without a fight has a triumph without glory." Marcia had to fight hard. She lost a few battles, missed a few cloning steps, and fell down the GATC ladder a few times, but in the end she won the war of science. She got the glory, and I hope that she will make good use of it.

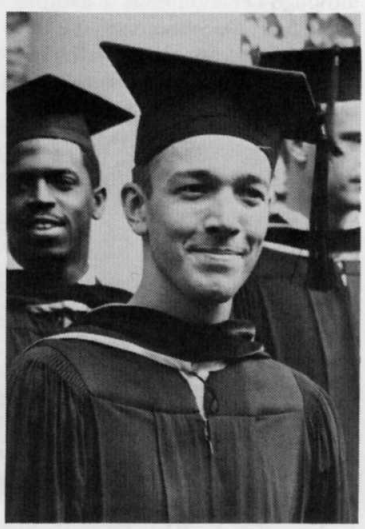
—Claude Desplan

Stephan-Michael Feller

Because of his desire for more advanced training, Stephan Feller, who was already on staff at the University of Heidelburg, Germany, came to the United States in 1989. One year later, Stephan entered our program and began to work in my laboratory.

Stephan's experience in biochemistry helped him determine a workable project. After one or two unsuccessful attempts, he began to





***Poised for the future*: Una O'Doherty (*left*) and Alexander Hoffman stand with fellow students after the ceremony.**

1994 graduates display wide-ranging talents and interests

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focus his work on identification of cellular proteins which bind to the SH3 domain, a part of the oncogenic Crk protein—the project we have been investigating in order to understand the role of this protein in signal transduction within the cell. Stephan designed a new approach and succeeded in detection of such binding proteins. More importantly, he subsequently discovered that a tyrosine protein kinase known as c-Abl can associate with the Crk protein and this kinase can alter the Crk protein's structure by phosphorylation. This was a surprising finding, which showed a new aspect of the Crk protein, and Stephan beautifully explained the details of this complex phenomenon.

In addition to his boundless energy and enviable appetite, perhaps most impressive is his skill in organization, which is obvious from his cleanly arranged desk and lab bench. We are fortunate that we will be able to enjoy his sense of humor for one more year, as he is going to continue his work here.

—Hidesaburo Hanafusa

Lei Feng

When Lei Feng first came to my laboratory, he immediately presented a challenge. Firstly, Lei's training in medical school in China and his rotation in the Wiesel laboratory had left him very well grounded in neuroanatomy. Given that at that time I was just beginning to become familiar with the subject, I knew I would have to accelerate my studies in order not to feel crippled in my conversations with my own graduate student! Secondly, although Lei and I both shared the conviction that serious molecular biology could pry open a rich treasure chest of mechanisms important for development of the nervous system, Lei had very little practical training in this area. I am here to report that both of these challenges have been met. My interactions with Lei have truly enriched my training in neurobiology, and Lei is now an efficient and creative molecular neurobiologist.

Lei's research in the lab began with a collaboration to identify molecules that mark very specific stages of differentiation of cerebellar granule cells. These studies were very successful, resulting in a previously unrecognized stage of cerebellar histogenesis and yielding scores of novel and interesting cDNAs that provide avenues toward discovery of new mechanisms of development. I have no doubt that upon completion of his medical training at Columbia, Lei will become one of the select scientists of his generation.

I have been fortunate to serve as Lei's mentor. I will miss Lei's genuine scientific talent and his sense of humor, and I am in certain danger of becoming rapidly computer obsolete upon Lei's departure.

—Nathaniel Heintz

Mark Stuart Forman

In order to pursue his interest in research full time, Mark took a leave of absence from Duke University in 1988 to join the graduate program here. He will return to Duke this summer to complete his M.D. degree.

In his thesis research, Mark definitively established that the complex and direct interaction between two types of cells, B and T lymphocytes, determine the quality of the humoral immune response to foreign antigens. Furthermore, he began to unravel the molecular basis for regulating the enzymatic activity of a novel tyrosine kinase that is important in the development and function of lymphocytes.

It was evident to me soon after his arrival that Mark was an exceptional student and that I was lucky to have him choose my laboratory. Mark's remarkable thirst for knowledge motivated him to take his course work here more seriously than many. More importantly he used the courses to guide him toward in-depth study of many different subjects.

Mark freely shares his knowledge with others. He leads many of our group's discussions on everything from *The New York Times* crossword puzzle—which is the one thing he hasn't mastered yet—to basic biochemical pathways. Mark is truly a scholar. For my part, I will always seek students who, like Mark, challenge me to be my best in order to keep up with them.

—Ellen Puré

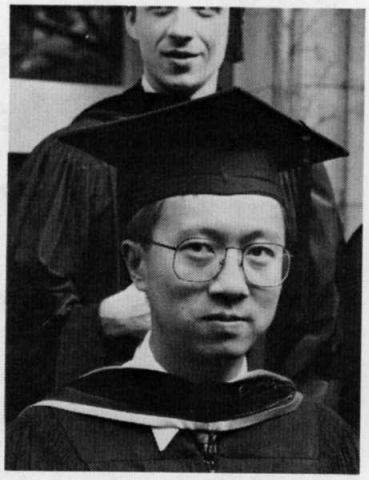
Alexander Hoffmann

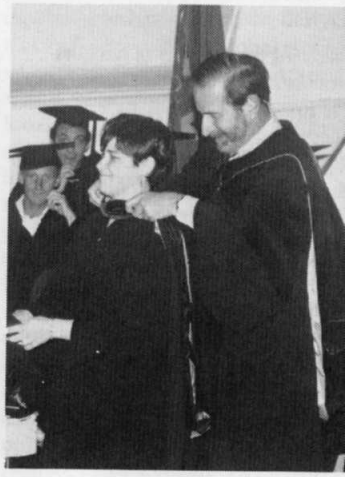
Alex came to Rockefeller in 1988, and happily for me joined my laboratory to study the regulation of gene expression in mammalian cells. After rapidly assimilating the activities of the laboratory, he chose an extremely timely project which led to the first cloning and characterization of the central transcription factor in human cells, work which catapulted him to fame at a very early stage in his career. This protein, the so-called TATA-binding protein, is literally at the center of the process by which proteins make copies of the genes and are recruited to the promoter. It's important to emphasize the key role Alexander played as a leader and visionary, stimulating key studies by others in the laboratory and forging remarkably productive collaborative studies with others outside the laboratory.

On a more personal basis, it's an understatement to say that Alexander has been one of the more colorful individuals at Rockefeller. While pursuing his work he did not resist the temptation to thoroughly enjoy the cultural— and pseudocultural—aspects of New York. Further elaboration would get me into trouble.

Alex is now seeking new conquests for his remarkable talents in molecular biology and appears to be leaning toward studies on HIV. What laboratory will be fortunate to snare him is not yet clear, but he has visited prominent laboratories both in the provinces and in the very few large cities that could satisfy his wide-ranging interests.

—Robert G. Roeder





Graduate Lei Feng (*right*) reflects on the moment. Marcia Simpson Brose receives her hood from Professor David Luck.

Tae Kook Kim

On joining my laboratory in 1990, T.K. chose a project on the regulation of gene expression that would allow him to take advantage of his background in yeast genetics and our recent success in the cloning and initial characterization of general transcription factors, such as the TATA-binding protein. He was able to contribute important new information on the structure and function of these factors, and especially very novel insights into protein–protein and protein–DNA interactions during the gene-activation mechanisms. These studies were quite successful not only because of T.K.'s keen insights into the problems and his remarkable efficiency in executing definitive experiments, but also because of his remarkable tenacity in analyzing interrelated problems, only part of which I sanctioned.

On a more personal note, T.K. has been a valuable colleague, especially because of his expertise in yeast genetics. His efficient but friendly style of work and his overall productivity have been a pleasure to witness. While finishing his thesis in near record time, at least for my laboratory, T.K. has nonetheless devoted time to his church, his wife, and his daughter. Having made significant contributions to an understanding of general aspects of gene activation in eukaryotes, applicable to yeast and humans, T.K. will now turn his attention to the regulation of gene expression—a topical area because of the intimate relationships to cell growth and malignancy.

—Robert G. Roeder

Lynne Ann Lapierre

I think that it is most appropriate that Lynne's thesis work involved the analysis of a gene that exhibits unusual diversity. So, too, with Lynne. Her interests, knowledge, and experiences are diverse. Over the past few years I have had the pleasure of discussing with Lynne such diverse topics as: gourmet cooking; down-to-earth pesto recipes; the best way to grow tomatoes, squash, and cucumbers; whether or not to spray; to mulch or not to mulch.

We have discussed car repairs and how great ratchet sets are, Macs vs. PCs, Macs vs. PCs again, and then again, and again. We have had involved discussions on

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sports, society, politics, religion, movies, science, and science fiction. Lynne knows her way around these and many more subjects, and I haven't been able to change her mind on any of them yet. But, this reflects a persistence and single-mindedness that took her through her thesis project and will help her achieve her goals in life.

—*Jan Geliebter*

Elizabeth Méndez

Elizabeth Méndez entered my laboratory about five years ago with the aim of studying a basic problem in cell and molecular biology: What happens to the chromosome structure when an inactive gene is turned on?

Very little genetic material exists as free DNA strands waiting to be copied; instead, most DNA strands are coiled periodically around clusters of proteins to form strings of compactly beaded particles called "nucleosomes." Chains of such compact beads obstruct the progression of the RNA-synthesizing enzymes along the DNA strand. Elizabeth's main problem was to determine how the structure of the nucleosome is altered when the inactive gene is turned on: What happens to the bead to make its DNA more accessible?

The direct approach employed a new method that could separate the nucleosomes of active and inactive genes. That method was very successful in separating the nucleosomes of normal and cancer cells. Elizabeth then faced the more challenging problem of separating nucleosomes in different regions of the same oncogene. That required a method for separating gene fragments much larger than nucleosomes. A major accomplishment of Elizabeth's thesis was to show that large, well-defined segments of an active gene can be captured on mercurated magnetic beads.

Elizabeth travels in an aura of vivacity, charm, and good humor that has enriched our lives for five years, and we are grateful to her for that wonderful gift.

—*Vincent G. Allfrey*

Anthony Molloy

Anthony Patrick Benedict Molloy, better known to all of us as Ant, joined my laboratory in 1988. Ant was my first student. The process we embarked on was quite a learning experience for both of us. Our five years together were interesting, productive, and very entertaining.

Ant was a wonderful student: always interested, always well informed, often single minded to the point of being impossible. He was creative, relaxed, friendly, and fun. The immunology of tuberculosis was injected with new life in our lab. Ant established a model of tuberculosis infection of human macrophages to study cell-mediated mechanisms of bacterial resistance. His studies showed that a subset of T cells can kill macrophages infected with tuberculosis mycobacteria. In an exciting development, he showed that when macrophages die by an apoptotic mechanism, the intracellular mycobacteria can also be killed.

This is the time to acknowledge the invaluable contribution of the late Dr. Zanvil Cohn to Ant's education. Ant's publications and his thesis are a tribute to our three-way interaction.

—*Gilla Kaplan*

Pratik Mukherjee

When Pratik arrived at our lab from Yale he was younger than most students, and I was reluctant to accept someone with almost no prior biological experience. However, he already possessed an impressive knowledge of the part of the brain I was interested in, the lateral geniculate nucleus (LGN), a highly organized structure, strategically interposed between the retina and the visual cortex, whose function is only poorly understand. Pratik wanted to apply his skills in computer modeling to explore this nucleus. He accomplished that by recording simultaneously from the input and output of cells in the LGN, and by making quantitative comparisons between them. More importantly, he developed a detailed, biophysically realistic computational model of the principal cells of this nucleus, and challenged the model to reproduce the responses he was measuring physiologically. This approach taught us much about the importance of certain biophysical parameters that control neural activity in the LGN.

In the course of conducting his research, Pratik became the lab's resident expert in modern computer technology. I resented it very much when he knew more about my computer than I did. But he was always ready to help others with their computer problems. He is now completing his medical education across the street, and plans to continue to apply computational techniques to medical research.

—*Ehud Kaplan*

Victor Allen Neel

Vic Neel came to the lab with very focused interests. He wanted to study the molecular basis of learning and memory. We had been using fruit flies to ask questions about a much less complicated behavior—the molecular biology of circadian rhythms. Vic wanted to train flies to perform simple tasks and isolate a first few learning and memory mutants. But flies were poor students. It was hard to hold their attention, even though the flies' penalty for forgetting a lesson was near electrocution.

So Vic changed his tack. Evidence was accumulating that certain vertebrate proteins might be involved in learning and memory. Vic's plan was to see if homologues could be found in the fly, and if so, ask whether their use in the fly signaled involvement in learning. Vic focused on a gene called GAP 43 and found that a related gene was indeed present in the fly. Its encoded protein strongly interacted with a form of calmodulin that is also produced at high levels in the fly brain and is implicated in learning.

—*Michael W. Young*

Deborah Jean Norman

When Debbie came to my lab, she became interested in a fascinating mouse mutation called Lurcher, in which cerebellar Purkinje neurons die after birth, rendering the animal unable to perform even the most simple motor tasks. Given the very limited success that had at that time been achieved in positional cloning of disease genes, it was truly audacious for Debbie to propose to clone the Lurcher gene. Having become expert at the complex molecular genetic experiments required to approach that goal, I think Debbie would agree with that statement! It is a testimonial to Debbie's unflagging optimism and considerable scientific talent that she was able to precisely characterize the Lurcher locus both genetically and physically.

While carrying out these rather heavy molecular experiments, Debbie was also able to initiate a collaborative effort within the lab that demonstrated that the Lurcher gene acts to cause inappropriate cell death in cerebellar Purkinje cells, resulting in their loss and the consequent neurologic disease. The last project has important implications, since it suggests that different neurologic diseases may have a common pathogenic mechanism, hence providing an opportunity for development of interventions that might be beneficial in a broad class of these diseases. It was during this project that Debbie's creativity and scientific maturity were most evident. I am sure that these qualities portend success in her postdoctoral studies at the University of California, San Diego, and in all future scientific endeavors.

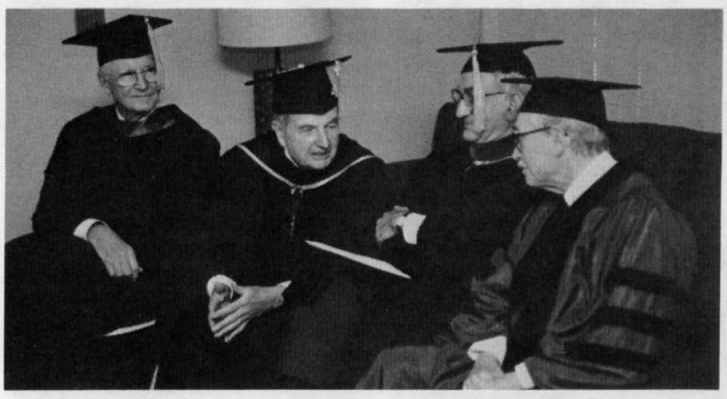
—*Nathaniel Heintz*

Una O'Doherty

Una joined our Medical Scientist Training Program after graduating from Barnard College. She was a biochemistry major, but somehow chose to study the immune system with myself and Ralph Steinman. Much like her unique name, Una came with a style all her own. Spirited and eager, she tackled some of the toughest projects.

She was able to identify a pathway that is important to the initiation of the human immune response. Specifically, she established the routes taken whereby dendritic cells become competent to stimulate the immune system. She also discovered how dendritic cells can express the CD4 molecule that is the receptor for the AIDS virus. This work stimulated our HIV program, much as the dendritic cell stimulates the immune system.

One of the strengths of a researcher is to recognize what he or she does not seek initially. Una rose to the occasion when confronted with scientific challenges.



Chairman of the board's executive committee David Rockefeller (*second from left*) talks with honorary degree recipient Louis Hector (*far right*) before the ceremony, as chairman of the board Richard Furlaud (*left*) and Professor Nicola Khuri look on.

Graduate Elizabeth Méndez receives her diploma from President Wiesel as Associate Professor Alan Aderem prepares her hood. At the podium is Professor Vincent Allfrey, her research advisor.

(continued from previous page)

She made insightful observations and pursued them.

Besides these proficiencies in the laboratory, Una possesses the ability to acknowledge her own oversights. As she freely admitted to newcomers to the laboratory, "Ask me anything, I've made every possible mistake there is." There was one other impressive characteristic that I came to associate with Una: You could always tell when she was embarrassed. She turned beet red. This seems to be the only biological response that Una hasn't figured out how to regulate in the lab.

Una plans a career in pathology and virology, hopefully HIV research, and we all wish her the best.

—Nina Bhardwaj

José María Prats Rocavert

I am supposedly José María's mentor. When he came to ask me to be his advisor, he nevertheless told me he did not wish to work on the topic that has been the focus of my work over the last few years. I lectured him at length on what a dangerous course of action this was. But José María, in his genteel way, was more stubborn than a mule with hoof rot.

José María was drawn to the study of quantum field theory. This is the language in which all the underlying laws of physics are written, so it is important for us to speak this language with precision and fluency. Alas, we are sometimes reduced to the status of tourists in some distant land who must resort to grunts and gestures. José María did not seriously alter this sad state of affairs, but he did show us how to answer certain hitherto unanswerable questions. He rebuilt some of the tools at our disposal, greatly increasing their power and scope. It was a joy to behold, and from him I learned much.

Every good physicist will, sooner or later, develop a distinctive "voice," a personal style of doing physics that will immediately identify its author in the same way that we may recognize the works of great composers and painters. I believe it was Bernoulli who, upon being shown an anonymous manuscript of Newton's, immediately identified the author saying, "I know the lion by his paw!" Well, José María's paw prints are all over his papers.

—Mark Evans

Vincent Prezioso

While the destiny of each animal, including humans, is undeniably individual, it may be that the most fascinating thing about each animal is that it develops from a single cell—the fertilized egg. When Vince Prezioso joined our laboratory in 1988 light had begun to dawn on the molecular basis for early development in invertebrates, particularly fruit flies, but the molecules that were important in man and his experimental surrogate, the house mouse, were still largely a mystery. Vince pitched in with others in the lab, and in a span of two years a family of proteins that was later learned to be crucial in early development had been discovered.

The proteins Vince discovered first came to interest us because they help the liver in adult animals to express certain genes that make a liver a liver. At this point there was no guarantee that we would ever understand liver cell differentiation, let alone the steps in development that occur before there is a liver in the embryo. But good fortune comes to the diligent, and as it turned out the genes for these "liver-enriched" transcription activators proved to be important in making early cell-fate decisions in the mouse embryo. Others in the lab have now proved that the gene for one in the new class of proteins discovered by Vince is absolutely required for early fetal development. Vince can be proud to have had an important hand in this progress.

—James E. Darnell, Jr.

Malini Vashishtha

Before coming to the lab, Malini and I had a series of conversations about possible projects for her to develop. Finally, she announced that she would join the lab, saying simply, "I think it will work." This remark reflects her spirit of confidence and determination. In her early explorations, she learned to make experiments count—generating data and observations that could be either pursued or left off. In a word, she was productive.

The main focus of her research was the molecular genetic analysis of a mutant named FLA10 that affects assembly of the eukaryotic flagellum, an organelle responsible for cell motility. She isolated and made a careful genetic map of yeast artificial chromosomes at this locus. This was an ambitious undertaking in itself, which contained the delightful insight that the unicellular organism we use as a model is so amenable to molecular genetic analysis with these tools. She went on to use these artificial chromosomes to develop a method for interpreting her genetic data in a functional assay. These efforts led directly to identification of the FLA10 gene. Her following experiments provided convincing evidence that the FLA10 gene product, which is essential for flagellar assembly, is also associated with basal bodies and so indicates a direct role for these organelles in flagellar development. Taken together her work constitutes a system that will be extremely useful for identification of other genes involved in basal body function and the flagellar assembly pathway.

Malini frequently wore Indian attire, which is rich in color and pattern. To me these garments came to symbolize the colorful and subtle qualities of her thought.

—John L. Hall

Zenta Walther

Zenta came to the lab when we had just derived a handful of clones from a chromosome that we study because it is rich in markers that affect basal bodies and flagella. Her original project was broadly defined: here are some clones from this interesting chromosome, tell us something about transcription. Such a project is either courageous or foolish or both. Perhaps this is the time to acknowledge that most of the courage was hers and most of the foolishness was mine. She jumped right in, bringing an incredible focus, a quick mind, and a ferocious skepticism. She was successful.

The main focus of her research was the FLA10 assembly mutant. Zenta came at the problem from a completely different direction, namely RNA and protein. In an especially arduous effort she derived a cDNA, did transcriptional studies, and made antibodies to the corresponding gene product. She followed with an elegant series of biochemical genetic experiments that have helped us model how and where this protein functions in flagellar assembly. To our surprise, analysis of the sequence of the FLA10 protein revealed that it is closely related to a protein expressed in mouse brain. From a biological standpoint this could be interesting. We may now be able to consider the functions of the FLA10 protein and its mouse homologue as related; one playing a role in assembly of the flagellar axoneme and the other playing a role in assembly of the neuronal axon.

It is impossible to conceive of the adventures of these past few years without Zenta.

—John L. Hall

Jay Wayne

Jay Wayne is a native New Yorker who attended the Bronx High School of Science and came to Rockefeller from Tufts University. Jay was the first brave graduate student to join my lab a little more than three years ago. You can imagine that this took a bit of courage since the lab was just getting underway and I had never been a mentor before. But Jay took it all in stride; I think that he decided that he would be a good teacher for me. And in fact, he was. It was a steep learning curve for both of us and I have learned a number of important lessons from Jay in the last three years. But there were things I was just unable to pick up. Among those was how to do experiments at 4:00 A.M. to heavy metal music played so loud that the building vibrated.

Despite these interesting work habits—or perhaps because of them—Jay was able to accomplish a great deal in a short time. His thesis was on the recombinase activating genes that mediate the recombination of the antigen receptor genes of the immune system. Jay's work has uncovered a new and previously unsuspected role for these genes in regulating lymphocyte development. Jay believes this is an essential quality-control function for the developing immune system.

This is an important summer for Jay: In addition to receiving his Ph.D. degree, he will be getting married and moving to the Boston area where he will work in the biotechnology industry. We will miss his biological insight and his dry sense of humor.

—Michel Nussenzweig

Two distinguished leaders receive honorary degrees

T.D. Lee

With the explosive advances in the natural sciences, specialization has become the norm. It is, lamentably, an increasingly common fact of scientific life today that colleagues in what is nominally the same discipline find it difficult to communicate with one another.

Our honoree is a striking exception to this trend. Tsung-Dao Lee's name, along with that of his collaborator C.N. Yang, first became familiar to the public in connection with their daring proposal that the laws of nature are not all invariant under space reflections, or left-right symmetry. Nature, it turned out, allows us to define words like clockwise and counterclockwise absolutely and empirically, and in such a way that we could explain the concepts they denote to a citizen of a civilization entirely different from our own. This breakthrough was not only exciting in itself, but led to the correct formulation of the weak force and set the stage for the unification of the weak and electromagnetic forces.

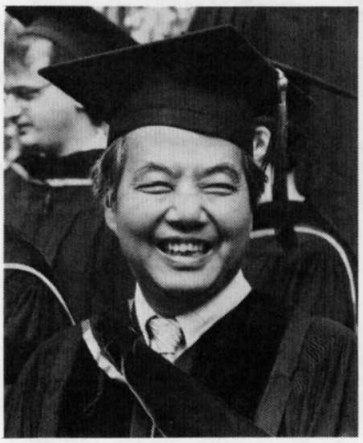
Several years before this fundamental work, which richly deserved the Nobel, these two scientists made seminal contributions to statistical mechanics. Their work on phase transitions provided the currently accepted picture for these phenomena and involved the solution of a very difficult mathematical problem. To myself and most of my fellow graduate students in the 1950s, it was the so-called Lee Model that clarified the ideas of renormalization theory, that taught us how to correctly remove unwanted infinite quantities from relativistic quantum theories, and is today a tool basic to our understanding of fundamental particle phenomena.

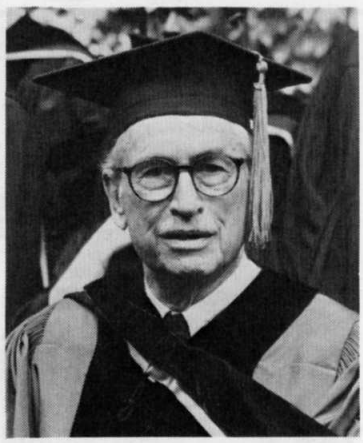
His scientific accomplishment is worthy of any honor we can pay it, but in addition, Professor Lee has long distinguished himself as a scientific statesman whose activities span the globe. He started the CUSPEA program, which has brought nearly 1,000 Chinese graduate students to the United States. He supervised the building of the Beijing Electron Positron Collider, used by both Chinese and American physicists.

In Europe, T.D. has advised the European Center for Nuclear Research ever since its creation. In this country, Brookhaven and the Fermi National Laboratory have benefitted for three decades from a mind uniquely sensitive to the balance between theory and experiment. And as three of the presidents of Rockefeller can testify, T.D. has been generous with time and advice for our own institution. On a personal level, I and many of my colleagues cherish his friendship and support.

Detlev Bronk said that we should choose people for the honorary degree whose careers set an example worthy of emulation to our graduates. Today it is an honor to present Professor Tsung-Dao Lee, our colleague from northern Manhattan, a great scientist and a wise statesman of science.

—Nicola Khuri





Nobel laureate Tsung-Dao Lee (*left*) and chairman of the Lucille P. Markey Charitable Trust Louis Julius Hector received honorary degrees at Rockefeller's commencement.

Louis Julius Hector

Mr. Louis Julius Hector, as the first chairman of the Lucille P. Markey Charitable Trust, has played a critical role in Rockefeller University and all of biomedical science.

Mr. Hector, although a highly efficient lawyer, businessman, and administrator, is a genial man, and his easygoing nature was evident in his college days. An old friend—I won't tell who—told me this story.

Many years ago, as an undergraduate at Williams College, Louis had a small checking account at a local bank, which his father had opened to encourage responsibility. One day, the president of the bank called young Hector and requested a visit. Louis went downtown. After inquiring about his studies and so forth, the president said, 'I do want to ask one favor. About your checking account: We all know you and appreciate you and your father, but when you write checks, would you please not just sign them Louis.'

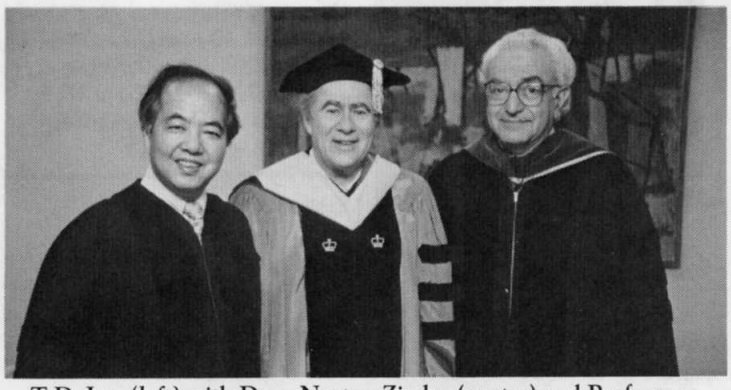
Now this is not to suggest in the slightest that Mr. Hector is not a stickler for detail.

A 1938 Rhodes Scholar, and graduate of the Yale Law School, Louis rose to prominence in Miami business and law circles. Among his many important clients was one who gave him the chance to serve the biomedical community—and it is our great good fortune that he chose to do so. Admiral Gene Markey and his wife Lucille sought Mr. Hector's advice about charitable contributions. By this time, Louis was a Rockefeller University Council member; in 1981, he joined our Board of Trustees. Convinced himself of the importance of the biological sciences, he convinced the Markeys to consider basic biomedical research. They did so, making several initial gifts to Rockefeller for research in immunology.

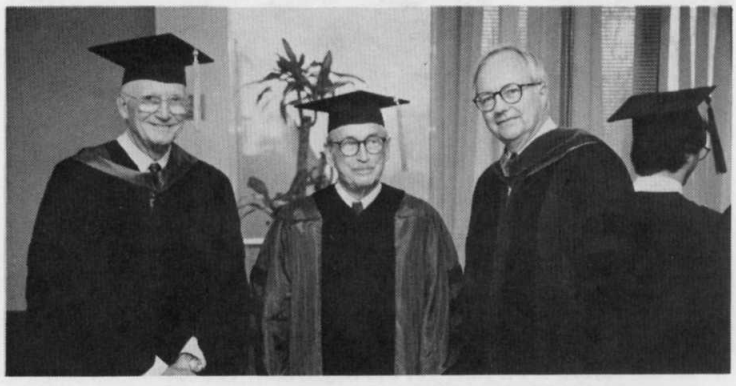
After Mrs. Markey's death in 1981, Louis became the first chairman of the Lucille P. Markey Charitable Trust. The Markey has since given over $450 million to various excellent scientific and medical programs. Particularly important have been the Scholars Awards, which have launched over 100 young professors. While it would be ungenerous not to mention Rockefeller's gratitude for the more than $10 million the Markey has invested here—again, largely in young people—we salute you mainly for the clarity of vision you have brought to the demanding task of assisting all of American biomedical science.

Mr. Hector also supports the arts. He has been vice chairman of the National Endowment for the Humanities and a council member of the National Gallery of Art. Thus there is ample reason to honor Mr. Hector as a person of broad learning, accomplishment, and interests, not only as one of the single most important contributors to biomedicine in the latter part of this century. I am indeed pleased to present Louis Hector.

—James E. Darnell, Jr.



T.D. Lee (*left*) with Dean Norton Zinder (*center*) and Professor Nicola Khuri, who presented him for the honorary degree.



Louis Julius Hector (*center*) with chairman of the board Richard Furlaud (*left*) and Professor James Darnell, his presenter.

Potpourri

In Memoriam

William J. Eisenmenger, who worked in the Kunkel lab in the late forties and early fifties, has died. A physician at Lenox Hill Hospital for more than four decades, his work here was on the relation of sodium and other electrolytes in the blood to retention of water in chronic liver disease.

Courtesy of the Artist

Vocalist Tara St. Martin performs June 14 with The Bob Alexander Big Band.

Tri-Institutional Noon Recital

The Bob Alexander Big Band, a 17-piece jazz orchestra, will perform at the last Tri-Institutional Noon Recital of the academic year today (June 24). Alexander—director, conductor, and trombonist—has performed as lead trombonist and soloist for the bands and orchestras of artists such as Benny Goodman, Skitch Henderson, and Tommy and Jimmy Dorsey. The concert, to be held in Caspary Auditorium at noon, is free. All are welcome.

Clinical Research Seminars

David R. Bickers, Carl Truman Nelson professor and chairman of the College of Physicians and Surgeons at Columbia University, will speak on "Skin—the model tissue" at the Clinical Research Seminar, Wed., June 29.

K.-P. Chang, professor in the Department of Microbiology and Immunology at the University of Health Sciences of The Chicago Medical School, will speak on "Extrachromosomal genetics of kinetoplastida parasites. New perspectives of an ancient disease along the 'Silk Roads'—Leishmaniasis," Wed., July 6. The seminars will be held at noon in Nurse's Residence 110B.

Volunteers

The Employee Health Office is seeking volunteers to view and evaluate educational tapes on managing childhood asthma and on gestational diabetes. If interested, call x8414 before July 1.

Book sale

A book sale to benefit the Children's School will be held in Tower lobby Thurs., July 7 from 8:30 A.M. to 3:00 P.M. A discount of 10 percent off list price will be offered.

Dining room

The Abby Aldrich Rockefeller dining room will close Fri., July 2, and reopen Mon., Sept. 12.

MassMutual benefits

Benefits may need to be adjusted for anyone covered by MassMutual who has had surgery since Oct. 1, 1993 or has had two dental cleanings since Jan. 1, 1994. Anyone with questions should send their Explanation of Benefits statements to Kristin Gross, box 125, by July 8.

Computer workshops

Computing Services is offering the following workshops during June and July:

- Introduction to Windows;
- Introduction to Macintosh;
- Word for Macintosh, Parts I & II;
- Word for Windows, Parts I & II;
- WordPerfect for the PC;
- Excel;
- UNIX for Sequencers;
- Introduction to Sequencing, Parts I & II; and
- On-Line Requisitioning.

To register, leave voice mail at x7768 stating your name (spelled out), extension, lab or department, and class desired. If you do not receive a call confirming your registration, the workshop has been filled and you will be put on the waiting list for the next one.

Carol Fonde

Associate Dean Marjorie Russel (*left*) hosts a welcoming lunch for members of the Summer Undergraduate Research Fellowship program, which gives undergraduates a chance to work with Rockefeller graduate students for ten weeks.

Needed at Children's School

The Children's School is looking for a donation of a fax machine. The school also wants to purchase a McLaren double stroller. If you can help, please call Marjorie Goldsmith, x8580. Volunteers are needed to help in the assembly of the new playground on July 8. Anyone interested may come to the playground area anytime during the day to lend a hand.

Aerobics trial class

Corporate Conditioning, 400 E. 67th St., is offering a free trial aerobics class. All classes meet Mon. through Thurs. from 5:30 to 6:30 P.M.; classes cost $70 for a six-week session. Call Joan Steinfeld at 734-3908 for more information.

Discount

Kam Hing, a Chinese restaurant at 1217 First Avenue, is offering a 10 percent discount for lunch and dinner to RU employees and students who present an I.D. card.

World Cup watch

The Faculty and Students Club will be open whenever ESPN broadcasts a World Cup soccer match; this includes weekdays, Saturdays, and Sundays until July 17.

New position

Karen Sokol, formerly a postdoctoral fellow in the Hayre lab, has become associate director of the diagnostic lab in LARC.

Departures

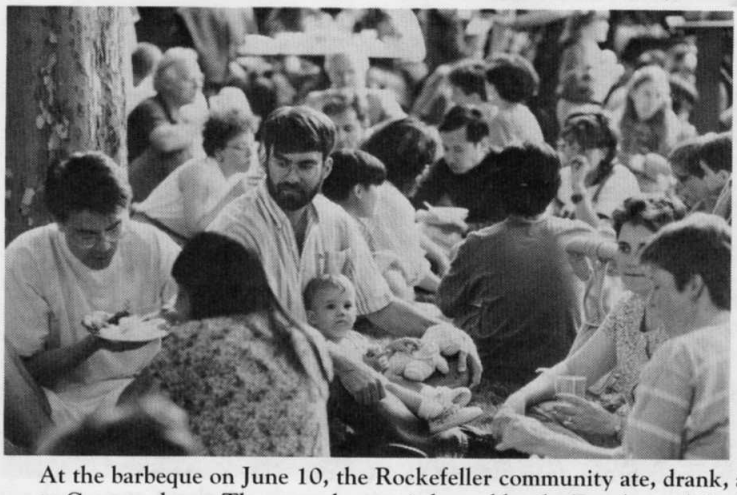
Postdoctoral Associate: Divakaremenon Venugopal, Agosta lab. Guest Investigator: Thomas Heinemann, Breslow lab.

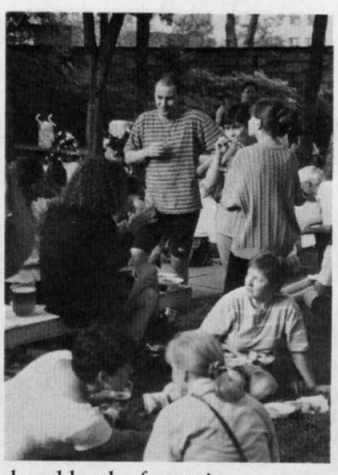
Correction

In the June 10 issue, *News&Notes* described RU as having a nuclear magnetic imaging facility. RU is equipped only for nuclear magnetic resonance spectroscopy.

N&N Summer Schedule

This is the last weekly issue of *News&Notes*, which will be published on a monthly basis in July and August. Weekly publication will resume in September.





At the barbeque on June 10, the Rockefeller community ate, drank, and relaxed by the fountains next to Caspary dome. The annual event is hosted by the Faculty and Students Club.