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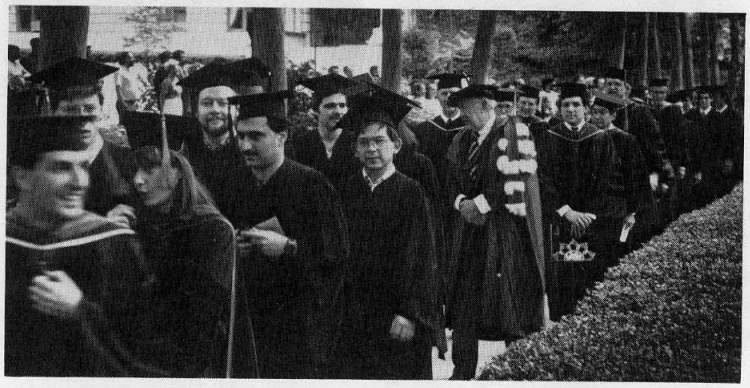
The Rockefeller University

news & notes

June 18, 1993 Volume 3, Number 34 — *The Rockefeller University*



Convocation ceremonies began with a colorful procession up the campus's main drive.

University holds 35th convocation

Following its tradition of a uniquely personal convocation ceremony, The Rockefeller University awarded 19 Ph.D.s and three honorary degrees at its 35th commencement on June 10.

Faculty, students and honorary degree recipients began the ceremony by marching in full academic robes up the sunny 66th St. drive which was lined by jubilant friends and supporters. Once seated in Caspary Auditorium, the 19 Ph.D. recipients, who included four students in the Tri-Institutional M.D.-Ph.D Program, were called up one by one as their research advisors explained the significance of their projects and recounted personal anecdotes about each of them.

After President Torsten Wiesel conferred the Ph.D. degrees, diplomas were presented to the three honorary degree recipients: Seymour Benzer, a professor at the California Institute of Technology whose studies revolutionized the understanding of the genetics of inherited behavior, J. Richardson Dilworth, a distinguished public servant who is trustee emeritus at The Rockefeller University and the Institute for Advanced Study, and George Thorn, professor emeritus at Harvard Medical School who conducted pioneering research in both dialysis treatment and hypertension. (See pages 3 - 8 for excerpts of the proceedings.)

Trustees extend Wiesel's term

Two promoted to rank of associate professor; new program for environmental studies launched

In its meeting June 10, the Board of Trustees extended President Torsten Wiesel's term as president through December 1996. The board also promoted Stephen DiNardo and Nikos Giokaris to the rank of associate professor and approved a new Program for the Human Environment to be directed by Jesse Ausubel, senior research associate at the university.

President's term extended

Richard Furlaud, chairman of the Board of Trustees, and David Rockefeller, chairman of the board's Executive Committee, announced the extension of Wiesel's presidency: "We all are very enthusiastic about this decision. Dr. Wiesel has provided extraordinarily wise and sensitive direction for the university in a particularly challenging time. It was only a year and a half ago that he accepted the call to the presidency and left his laboratory to lead the university. He has accomplished a great deal in a short time. His trusted and inspired leadership has made it possible to attract outstanding scientists to the faculty, add substantial resources to the university and move the university into a stable financial position.

"We are most appreciative of his willingness to continue as president well beyond his original commitment," they continued. "He will provide the continuity essential for the ongoing growth and strengthening of the university. Even more important, he will bring the vision, knowledge and energy needed for the exciting and challenging period ahead of us."

Wiesel accepted a professorship at The Rockefeller University in 1983, two years after receiving the Nobel Prize for his pioneering work on the visual cortex of the brain. In January 1992, he became president of the university, initially for a three-year term.

Stephen DiNardo and Nikos Giokaris promoted

Of the two faculty promoted to associate professor, DiNardo is a developmental biologist and Giokaris, a physicist.

DiNardo focuses on cell determination in the developing embryo, using the fruit fly, *Drosophila*, as a model. He heads a lab which studies how cells in the developing embryo are instructed to take on different identities during the establishment of body form, including the roles of specific genes in this process. His research group also works on gonadogenesis and spermatogenesis, investigating the development of the gonad and the differentiation of sperm cells.

A native New Yorker, DiNardo earned a B.A. in biology/chemistry from Columbia University in 1977 and a Ph.D. in biochemistry/molecular biology from the State University of New York at Stony Brook in 1983. Before coming to Rockefeller as assistant professor and head of laboratory in 1988, he was a postdoctoral fellow at the University of California at San Francisco. DiNardo, who is the author of numerous publications, has been the recipient of the Helen Hay Whitney Postdoctoral

See ***Board****, page 2*

President discusses state of RU at open meetings

President Torsten Wiesel discussed the state of The Rockefeller University in two open meetings on June 7, one with the faculty in the morning and another with staff in the afternoon.

"From where I sit, it seems that the university is in good health—both academically and financially," said Wiesel. "We are bringing down the cost of operations and recruiting junior and senior faculty. I have noticed a sense of optimism on campus and, in general, there is a good spirit of cooperation and enthusiasm. I encourage you to feel free to bring up issues and questions that you think should be addressed by the administration."

New dean of graduate and postgraduate studies

The meeting of the faculty focused on the graduate student program and the searches for new faculty.

Wiesel announced that Professor Norton Zinder, who has been a member of the Rockefeller faculty since 1952, will become dean of graduate and postgraduate studies in September.

"I am very pleased that Norton Zinder accepted my offer to become dean," said Wiesel. "To have Norton devote his mind and his energy to the student program is a very good thing for the university. We have an excellent team to guide us and our students."

See ***President****, page 7*

President Torsten Wiesel meets with the university community June 7.

2 Friday lecture features geneticist

8 Hanafusa wins cancer award

Friday lecture features leading geneticist

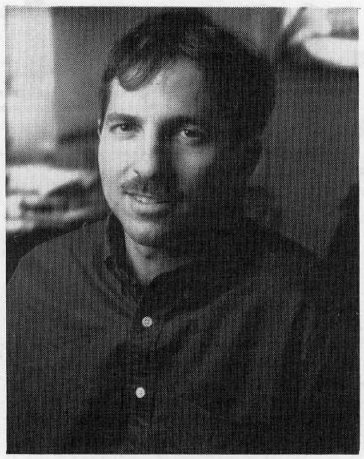
Nancy Jenkins, senior scientist at the NCI Frederick Cancer Research and Development Center, will give a talk entitled "Mutations at the Mouse Microphthalmia Locus are Associated with Defects in a Novel Basic Helix-Loop-Helix Zipper Protein" today (June 18) as the last Friday lecture of the academic year.

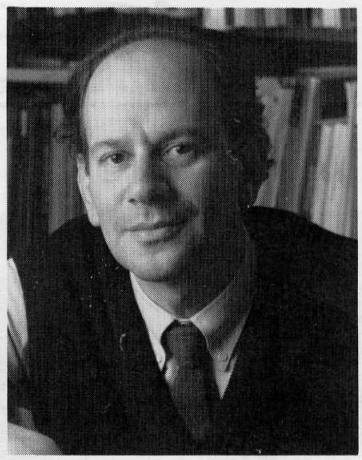
"The ability to clone mutant genes from mammals is relatively new," said Associate Professor Jeffrey Friedman who is hosting the lecture, "but the era in which that technology was developed began with the experiments of Nancy Jenkins and her colleague Neal Copeland, when the mouse *dilute* gene was cloned. Since that time, Jenkins and Copeland have been leaders in mouse gene mapping and in the application of modern tools to mammalian genetics. They have made innumerable contributions to the field."

In a recent study, Jenkins and her colleagues used the technique of transgenic insertion in the mouse to identify a gene called *mi* and to study its role in development. The gene encodes a protein expressed in the developing eye, ear and skin. Jenkins found that mice with mutations at the *mi* locus exhibit loss of pigmentation, reduced eye size, failure of secondary bone resorption, reduced number of mast cells and early onset deafness. In her lecture, Jenkins will present an overview of her study.

Jenkins received a B.A. in chemistry in 1972 from Sweet Briar College and, later, an M.S. in microbiology (1974) and Ph.D. in molecular and cellular biology (1977) from Indiana University. She was a postdoctoral fellow at the Dana Farber Cancer Center at Harvard Medical School from 1978 to 1980, and at The Jackson Laboratory in Bar Harbor from 1980 to 1981. Jenkins continued her work at The Jackson Laboratory as a staff scientist until 1983, when she joined the faculty of the University of Cincinnati College of Medicine as an associate professor of microbiology and molecular genetics. In 1985, Jenkins became head of the Molecular Genetics of Development Section in the Mammalian Genetics Laboratory. Jenkins has received numerous grants and fellowships.

The lecture, which is free and open to the public, will be held at 3:45 P.M. in Caspary Auditorium. Tea will precede it at 3:15 P.M. in Abby Aldrich Rockefeller Hall.





The Rockefeller University Board of Trustees promoted Stephen DiNardo *(left)* and Nikos Giokaris *(center)* to associate professor. Jesse Ausubel *(right)* was named senior research associate and director of the new Program for the Human Environment.

Board promotes two faculty, approves environmental program

(continued from page 1)

Fellowship and is currently a Lucille P. Markey Scholar.

Giokaris, a member of the Goulianos lab, studies the fundamental constituents of matter using high-energy particle colliders in which protons and antiprotons, accelerated to high energies, are brought into violent collision. He has been involved in designing, constructing and testing detection equipment for experiments at the Fermi National Accelerator Laboratory in Illinois, and in preparing a larger detector to be used in the Superconducting Super Collider in Texas.

A native of Arcadia, Greece, Giokaris is a graduate of the University of Athens (B.S., 1973), and the University of Chicago (Ph.D., 1981). Before coming to Rockefeller in 1985, he worked as a research associate at the University of Rochester (1981-83), research associate-at-large at the Fermi National Accelerator Laboratory (1983-84) and visiting assistant professor at the University of Notre Dame (1984-85). The author of numerous publications, Giokaris is a member of the American Physical Society and the American Association for the Advancement of Science.

Program focuses on environment

The new Program for the Human Environment directed by Ausubel will act as a focus for the university's activities related to the environment.

"The establishment of the program recognizes the vital and growing connection between the research at Rockefeller and environmental concerns," said Ausubel. "An important part of the mission of the program is to increase the links among existing research activities at the university. I hope people on the campus whose work touches on environmental issues will feel free to contact me with their ideas."

The new program will organize workshops and seminars on topics of interest to the campus community, host visiting scientists in environmental fields, encourage collaborations involving faculty and students, and support selected research initiatives. It will communicate the results of environmental studies involving the university to industry, non-profit organizations and government in an effort to inform environmental policies. The program will also collaborate with other institutions in the New York metropolitan area.

Industrial ecology—the network of industrial processes as they interact with each other, economically and in the use of each other's material, energy, wastes and products—will be the initial theme of the program. Research in this field, conducted by Ausubel and other experts, may help predict and alleviate threats to human health and the environment. Other themes of the program may include human exposure assessment, ecotoxicology, biological markers, neurotoxins and theoretical ecology.

Ausubel, a graduate of Harvard and Columbia, has been a fellow in science and public policy at Rockefeller since 1989 as well as director of studies for the Carnegie Commission on Science, Technology, and Government. Ausubel is also currently a visiting senior scientist at Woods Hole Oceanographic Institution. Prior to coming to the university, he served for a decade with the National Academy of Sciences and the National Academy of Engineering in Washington, D.C., where he directed several major studies on the environment. He is the author or editor of over 60 publications and has contributed to the understanding of emissions from industrial processes and the materials flows in the environment caused by human activity.

Notes from RU's Academic Council

The Executive Committee of the Academic Council elected Professor David Luck as its new chair. New members of the Academic Council, which represents the faculty on matters of interest to the university, are Professors Mary Elizabeth Hatten, Nathaniel Heintz and John Kuriyan, and Associate Professor Stephen DiNardo. Faculty members serve three-year terms.

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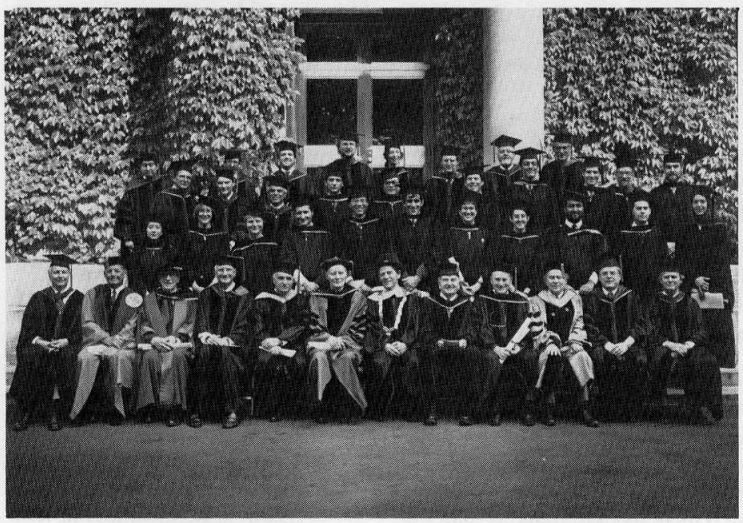
Convocation excerpts: advisors present graduates, with pride

Following are excerpts of remarks from The Rockefeller University's convocation ceremonies, June 10. Kathy Siyun Fang and Charles T. Reichman were awarded degrees in absentia.



John Sholtis, Media Resource Service Center

The class of 1993 gathers on the steps of Founder's Hall.

Gregg Louis Caporaso

Today, Gregg is an M.D.-Ph.D. candidate who receives his Ph. D. from The Rockefeller. Tomorrow, he returns to clinical duties—in fact, to a clinical course exam—at Cornell Medical School.

Gregg's thesis focused on the cell biology and regulation of protein processing and trafficking. Specifically, Gregg performed a systematic and quantitative series of studies on the metabolism of a protein implicated in the cause of Alzheimer's disease, the beta-amyloid precursor protein. Gregg's work led to several publications which have already become standard references in this active and competitive field.

In addition to his talents in experimental biology and medicine, Gregg also has a knack for sketching classical art. During the past three years, he converted much of the wall space surrounding his lab bench into a personal gallery. With his recent return to clinical training, however, we have begun auctioning off Gregg's sketches to support the continuation of some of the experiments he had begun. Perhaps this is a strategy that he can also use to raise support for his science in the future.

—Sam Gandy, with Paul Greengard

Chih-Hao G. Chou

Fortunately for biomedical science, and society in general, we have a few individuals like Chih-Hao Chou who are trying to bridge the gap between clinical medicine and basic research. Chih-Hao's thesis research involved studies of the pathogenesis of the autoimmune disease systemic lupus erythematosus. Lupus is a severe form of arthritis characterized by the production of abnormal antibodies against the nuclei of one's own cells, termed antinuclear antibodies. Since antinuclear antibodies are the hallmark of this disease, Chih-Hao's research focused on the causes of these abnormal antibodies. In addition, his work led to a better understanding of the biology of some of the nuclear proteins that are attacked by the immune system in this disease.

He has also developed an interest in American sports, and is an avid fan of the NY Nicks, NY Giants, and, since our move to the University of North Carolina, the number one UNC Tarheel basketball team. The move to North Carolina has also stimulated a latent interest in collectibles, and Chih-Hao now has one of the most extensive collections of parking tickets south of Brooklyn. His current activities include catching up on his sleep in anticipation of fatherhood, and the beginning of a medical residency at Duke.

—Westley H. Reeves

Margaret M. Chou

Margaret Chou began her graduate work in the laboratory of the late Professor Tom Kaiser. After the tragic death of Dr. Kaiser, she joined my laboratory.

We have been working on a new class of relatively small cytoplasmic proteins, so-called adapter proteins. These proteins contain SH2 and SH3 domains, and appear to serve as a linker between cell surface receptor tyrosine kinases and proteins of the cytoplasmic cascades such as Ras, so that information received by surface receptors can be transmitted to the nuclei. She took one of the newly isolated genes, called *Nck*, and established that expression of a high concentration of *Nck* protein in cells causes cell transformation, cancerous growth in mammalian cells.

This is an area of intense research and she faced stiff competition from several strong laboratories. I can proudly say that she managed the competition successfully by intensifying her effort and, as a consequence, progress in her thesis research during the last year benefited tremendously.

Margaret was active not only in science: she was a superb organizer of lab parties and gift-givings. To me, however, her most remarkable qualities were her rapid tone of speaking and quick thinking. Very often I complained to her that my brain cannot keep pace with hers. Thus, although she is not large physically, her signal transduction, particularly in the brain, is unusually active.

—Hidesaburo Hanafusa

Charles Benjamin Epstein

One of the strengths of our graduate program is that students are given the freedom to explore many types of research. Chuck took advantage of this freedom. In his work with Sam Wright, he became experienced in cell biology and biochemistry, and able in experimental design and interpretation. In my lab, he broadened his horizons to genetic analysis, working on molecular genetics of yeast cell cycle control.

Although at this time he was already several years along in his graduate student career, Chuck decided to start a new avenue of research. Chuck discovered three new genes involved in yeast cell cycle control, and made a great deal of progress in working out their mechanism of action. One of these genes turned out to be a novel cyclin probably contributing to several different steps in cell-cycle progression. Another one showed some intriguing genetic interactions with other cell-cycle regulators. When Chuck's new gene was overexpressed, a whole class of cell-cycle regulatory proteins became unnecessary for life, but when Chuck's gene was inactivated, the cell became much more restrictive in its genetic requirements for successfully making it through the cell cycle. Chuck's third gene has remained quite enigmatic, but we are pursuing it actively. In a few years, Chuck accomplished a great deal here, including starting several lines of inquiry that we are still following.

—Frederick Cross

Julia M. George

The first thing you need to know about Julie is that she's a Texan. That means she doesn't like to waste words and she's adapted to looking out across vast expanses of land without flinching or blinking. And it means she's willing and able to consult her own inner compass to find her direction, even when that leads her in ways most others might not go. To our great benefit, she's brought these qualities with her into her science.

In Julie's patient and relentless thesis work, she single-handedly determined the sequence of seven different protein-encoding genes expressed in the songbird forebrain; she mapped their expression using *in situ* hybridization; she observed their regulation during various aspects of changing brain function and development; she synthesized antibodies to the protein products of several and used then to gain insight into protein localization; and she cultured brain cells to further define the distribution and function of the proteins.

Out of her work has come the discovery of a new brain molecule likely to play a significant role in neuronal communication and intracellular interactions. She also found that most of the genes she uncovered in the songbird brain have closely related cousins in the human brain as well. This provides a powerful confirmation that studies of diverse organisms such as the songbird will generate insights that will transfer to human beings, and may aid in the development of therapies for diseases for the brain.

—David Clayton

Michael Gordon Kaplitt

Mike Kaplitt came to the lab with a background in virology and an idea to invent viral DNA vectors useful not only for analyzing how neuronal gene expression governs behavior but also for neurological therapy. He succeeded in creating herpes-based molecular tools which allow gene transfer into cells in specific parts of the adult brain. These are useful for gene replacement attempts and also for prolonged antisense DNA application to block nerve cell gene output. More subtly, he has opened up *in vivo* promoter analysis for the preproenkephalin gene with his viral vector approach, a technique quicker and more versatile than transgenic mice. Working along roughly parallel lines with herpes vectors deficient in thymidine kinase, he has been able to kill brain cancer cells under selected

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1993 graduates show bright promise in diverse research areas

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experimental conditions.

Throughout, Mike has proceeded with degrees of imagination and vigor which are truly remarkable. As Mike returns to medical school in our M.D.-Ph.D. program, he will continue creatively to harbor two ambitions: to develop molecular gene transfer tools theoretically useful for attacking human neurological disorders and to train as a neurosurgeon to actually apply these tools for the patient's good.

—Donald Pfaff

Barbara I. Kazmierczak

Barbara Kazmierczak came to our M.D.-Ph.D. program with remarkable skills in science and music. Performing well at the lab bench and at the keyboard requires dexterity, intelligence and concentration, and Barbara had all of these.

Barbara chose to work on a very basic problem, the assembly of a bacterial virus. The virus is exported across two bacterial membranes as it is assembled. This process requires a viral helper protein with the undistinguished name of pIV, located in the outer of the two membranes. Its location suggested that—rather than directly catalyzing assembly—pIV might form an exit hole through which the assembling virus could pass. Barbara characterized this helper protein. She showed that pIV made the cells leaky, and in certain cases killed them. And, amazingly, she found that infecting these cells with virus rescued them from death—possibly assembling viruses were plugging up the exit holes! Though working with membrane proteins is often difficult, and pIV was not easy, Barbara showed that pIV existed as a large complex.

Though she had not chosen her problem for its clinical relevance, labs all over the world began to discover that a protein that looks very much like pIV is crucial for the disease-causing properties of several different kinds of bacteria. Because these proteins also function like pIV (they help other proteins get to the outside of the bacterial cell), Barbara's findings are of great general interest.

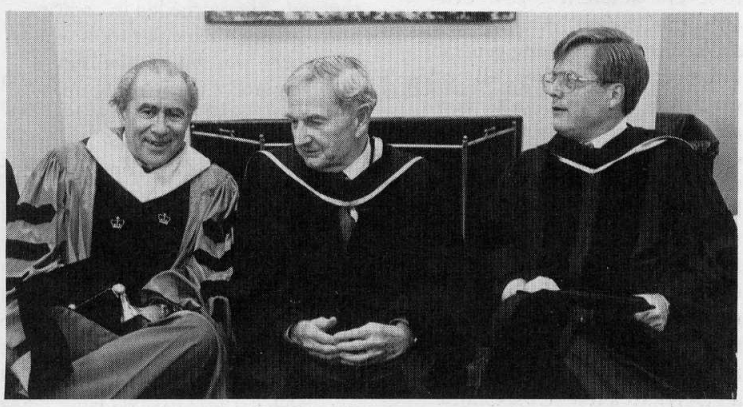
—Marjorie Russel

Claudio Vianna de Mello

Claudio Mello is a tall, quiet and graceful doctor from Brazil. Beneath Claudio's initially cautious Cheshire-cat exterior, I came to find a mind of exceptional focus and acuity, bubbling with enthusiasm. Claudio came to my lab expressing an interest in learning and memory, and in molecular neurobiology. Upon joining the lab, he wasted no time signing on to a project to look at the expression of the so-called immediate early genes in the songbird brain.

It took Claudio's focus, persistence and insight—and his ability to generate clean x-ray films—to peel back the layers of the onion. What he found is that immediate early genes are induced in the songbird brain during normal experience. In fact, simply hearing the sound of a bird singing is sufficient to induce these genes. But this is an observation that a lesser scientist than Claudio might have missed, because the induction occurs, not where we initially expected it to occur in the brain, but in other brain regions where we had not originally intended to look. More recently, Claudio's experiments have revealed that this gene activation doesn't occur just any time the bird hears any song—but, only when the song is new or novel, in the context of the bird's recent experience. Thus Claudio has shown that the pattern of gene activation changes with the particulars of an individual's experience. The implications of this are continuing to unfold, and will occupy us for some years to come.

—David Clayton



Professor Norton Zinder, Chairman of the Executive Committee of the Board of Trustees David Rockefeller and Professor Bruce McEwen *(left to right)* get ready for the ceremonies.

Philippe Moreillon

It all started at a meeting of the Infectious Diseases Society of America back in 1986. I was standing in line for registration when Michel Glauser, professor of medicine in Lausanne, Switzerland, grabbed my arm and led me to a smiling young man and said, "This is Philippe. Can you take him to you lab?" When I asked what Philippe was interested in, Michel said, "teach him everything you know." Philippe kept smiling. We shook hands, and soon he arrived in New York. I soon understood the prophecy in Michel's request: Philippe had an insatiable appetite for everything, everything that we knew or claimed to know.

Looking back at these years, it is hard to find one aspect of our work where I could not identify a signature of Philippe—a critical experiment, a penetrating insight, an irritatingly on-target critical remark pointing to a fallacy in my own thinking. And, of course, the rapidly multiplying black notebooks full of observations and wonderful multicolor illustrations with scribbled remarks in French and German.

This is no place to give a detailed account of Philippe's work on how penicillin kills and lyses bacteria and how the novel genetic element identified by Philippe on the bacterial chromosome goes out of control and puts the cell on a pathway of suicide when triggered by the antibiotic. I shall never forget the thrill when we looked together at the first radioautograms showing how a few minutes after encounter with an antibiotic, the bacterium literally "goes dark," turns off the synthesis of all of its proteins except one, a unique polypeptide which appears to represent a signal of stress emitted by the battered bacterium. The contents of the many black notebooks finally condensed into a single impressive treatise—Philippe's doctoral thesis—proposing a novel, provocative modification of our views concerning the mode of action of the most important antibacterial agent.

—Alexander Tomasz

Michael J. Overduin

We were lucky to be provided with a protein of extraordinary interest by Bruce Mayer and Professor David Baltimore, the Second Homology Domain (SH2) from the Ableson gene. Michael took the leading role, with Carlos Rios and me, in using NMR to solve the three-dimensional atomic structure of Abl SH2. NMR is still a relatively new tool for this, and each new protein provides some novel challenges to be overcome.

In a complex competitive race, with three papers published more or less simultaneously concerning the structures of this and other SH2 domains, Michael showed extraordinary energy, clarity of thought and integrity, as attested to by his authorship on two of these studies. Not only did he do an exemplary job of the structure determination, but he was especially impressive in his analysis of what the structure meant, in terms of how the SH2 domain might function, and how other proteins of this class might be organized.

Buffon coined his famous aphorism, "the style is the man himself." Michael's style is a special one. He is organized. He is tolerant, at least of his advisor's disorganization. He is ambitious, but knowing of and sensitive to the needs of others and the requirement of integrity in the babbling chatter of the world. Truly an extraordinary person, whom we shall all miss.

—David Cowburn

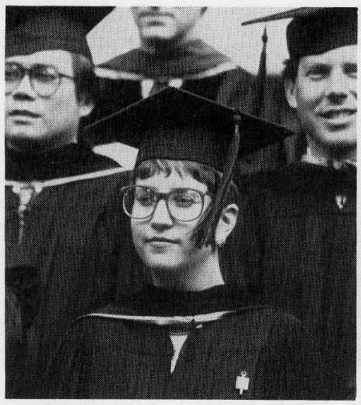
Andrew Plump

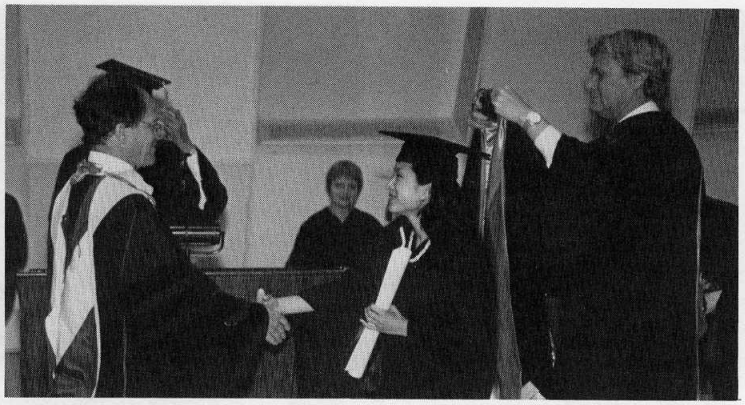
Andrew Plump is currently on leave from medical school at UCSF. The project he undertook here was an important but risky one, namely to make a mouse model of atherosclerosis.

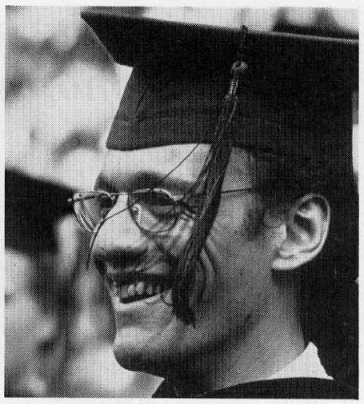
The genes Andy went after were two of the Apolipoprotein genes, Apo E and Apo A-1. With considerable ingenuity and a tremendous amount of hard work, Andy perfected the technique and knocked out both genes. As hoped, the Apo E-deficient mouse had very high levels of cholesterol in atherogenic lipoprotein fractions and developed complicated atherosclerotic lesions. The A-1-deficient mouse had low HDL levels, but did not develop atherosclerosis, suggesting that low HDL by itself is not sufficient to cause this condition.

The Apo E-deficient mouse has become the first small animal model of human-like atherosclerosis and will be invaluable in future studies of pathogenesis and therapy for this common human disease. The model has already been distributed for study to major academic centers and licensed to a number of pharmaceutical companies.

On a personal level, Andy has been a joy to have in the laboratory. His energy and intelligence have been a model for us all. In addition, he has a generosity of spirit that has benefited not only our laboratory but the broader community as well. Another part of Andy's persona that must not go







Left: **Barbara Sampson stands with her classmates at convocation.** ***Center:*** **Margaret Chou receives her Ph.D. diploma from President Torsten Wiesel *(left)* and her hood from Professor Michael Young.** ***Right:*** **Graduate Claudio Mello enjoys the festivities.**

unmentioned is that he is a sports fanatic. He has been a key player for the Rockefeller softball team, "The Scientists". In addition, he avidly roots for the New York sports teams and suffered severe depression after the Knicks lost to Chicago in the NBA playoffs.

—Jan Breslow

Barbara Alexandra Sampson

When the structure of the human FK506 binding protein was determined, a computer search revealed that it bore a striking resemblance to the gene of a protein of unknown function occurring in the meningococcus. The meningococcus is the bacterium which causes outbreaks of meningitis and has been studied in our lab for some time. The presence in a bacterium of a gene so closely resembling a human gene is distinctly odd and Barbara decided to study this problem. She cloned that gene into *E. coli*, the work horse of recombinant DNA technology, expressed and purified the protein, established that, like the human counterpart, it had prolyl-peptidyl isomerase activity, that it avidly bound the drug FK506, and that the protein drug complex was able to inhibit the protein phosphatase activity of calcineurin. In brief, the bacterial protein was functionally equivalent to the human FK506 binding protein.

It has been a privilege to have served as Barbara's mentor because she is indeed a fine student and human being in the best tradition of our graduate program. Her drive and optimism, her sunny good cheer, her quick intelligence and sense of humor, her sophistication endeared her to one and all in the laboratory.

—Emil Gotschlich

Anshu Vashishtha

Rheumatic heart disease afflicts one percent of school-aged children in developing countries. It causes damage to the heart valves, severely incapacitating the child for life. In India alone more that seven million children are affected by this disease, which is a result of a simple strep throat. Anshu Vashishtha joined our lab to try and answer some of the questions regarding this devastating infection. One of them is: why do rheumatic fever patients produce antibodies to their own heart muscle tissues?

Using state-of-the-art structural and immunological approaches he found that antibodies made against a streptococcal protein were also able to react to a specific region of a structurally similar protein found in human muscle tissue. However, the antibody would only react after the human protein was denatured or damaged. This strongly suggested that some of the antibodies to the heart proteins found in the rheumatic fever patients may be the result of cardiac damage and not responsible for the damage. His studies have given us new insights into the development of a safe and effective vaccine to protect against strep throat without the fear of inducing a rheumatic attack.

Anshu finds the time to perform community services, such as volunteering at the Lenox Hill Homeless Shelter. He has had high school students working with him in the lab during the summer. He loves to travel, and since rheumatic fever patients are not plentiful here in the United States, he would go to exotic places to find material for his studies. His dedication took him to Colombia, South America, in the midst of a drug cartel bombing spree to perform experiments in the laboratory of Manuel Patarroyo. We were all worried that he would return safely. He hopes to return to India after his training to use what he has learned to help his people.

—Vincent Fischetti

Leslie B. Vosshall

Leslie Vosshall came here with the clear intention of doing molecular and genetic research in neurobiology. She became deeply interested in the *Drosophila* gene, *per*, which is required for production of circadian rhythms. Leslie's enthusiasm often led her to juggle several projects at once, but one of these attracted most of her attention: the per protein appears to contain multiple nuclear localization signals, but is found in the nucleus in only some cell types—could regulation of nuclear accumulation be an important aspect of *per*'s control of rhythms?

Leslie generated transgenic *Drosophila* that expressed per proteins that appear to be constitutively nuclear. Expression of these proteins resulted in arrhythmic phenotypes. Similarly, by exploiting a new clock mutation discovered by others in the lab, Leslie found that if per proteins were never permitted to enter nuclei, an arrhythmic phenotype was also produced. This work pointed to the importance of regulated nuclear association for *per* and also allowed her to classify the new mutant gene as one likely to specify a critical component of *per* nuclear transport. Leslie developed an attractive model for how *per* and the new clock gene, which we call *timeless*, interact to produce an intracellular circadian rhythm of per nuclear accumulation.

—Michael W. Young

Lorin Weiner

Lorin has done an absolutely beautiful job of characterizing an entirely new *E. coli* operon, which is regulated in a different way from most bacterial operons, and, because it involves a network of protein-protein interactions, really more closely resembles one of the complex eukaryotic transcription units that some of our other colleagues struggle with. The work has been, to a considerable extent, a formal analysis of a regulatory paradigm; to this day, thanks to Lorin, we understand the central attributes of *psp* regulation well, a lot better than we understand what the products of this operon do for *E. coli*. Only now, again thanks to Lorin, do we have a glimmer of its function.

Lorin has been a challenging student, because he has such a well defined idea of how science should be done. I've gotten used to making a suggestion and being confronted with a totally blank gaze, which usually means that I've overlooked some complication which was immediately clear to Lorin. On the other hand, on the occasions when the suggestion doesn't have evident pitfalls, Lorin will incorporate it into a well designed, well controlled experimental series. Lorin is in the best sense of the word, an old fashioned scientist; quality of data and clarity of interpretation mean much more to him than glamour. I will miss his encyclopedic knowledge of his area, his depth of analysis, and the intensity with which he plans each experimental foray.

—Peter Model

Catherine S. Woolley

Catherine immersed herself in the study of the nervous system and became fascinated by neuronal structure and the connections between nerve cells. Then she made an important discovery, namely, that the so-called female hormone, estradiol, induces new synaptic connections to form in the hippocampus, a brain structure that is important in learning and memory and which is also involved in epilepsy. What was even more striking and unexpected was that these synapses formed and disappeared again during the five-day reproductive cycle of the female rat. The rapidity and reversibility of synaptogenesis as a result of a natural endocrine cycle challenges older notions about the static nature of synaptic contacts in the adult brain.

Catherine went on to show that the synapses, once formed, disappear, not as a result of decreasing estradiol secretion, but rather as the result of the active genomic action of the second reproductive hormone, progesterone. If that was not surprising enough, Catherine also found that blockade of so-called NMDA receptors for excitatory amino acids prevents estradiol from inducing new synapses in the hippocampus. NMDA receptors are implicated in a process related to learning in the hippocampus, and they are also involved in epilepsy. In fact, Catherine found in the scientific literature a striking parallel between the cyclic occurrence of increased vulnerability to seizures in

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Three distinguished leaders receive honorary degrees

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the female rat hippocampus and the time of the estrous cycle when she found the most NMDA-related synapses. Thus blockade of estrogen-induced synapse formation with NMDA-blocking drugs may be a novel way of reducing catamenial epilepsy, so-named because of its cyclicity within the human menstrual cycle.

The elegance and clarity of Catherine's experiments impressed all who read her thesis or heard her thesis talk. She will leave many warm friends and admiring colleagues who wish her the very best.

—Bruce S. McEwen

Weimin Zhong

On many occasions in its history, our country has benefited from emigrants who arrive with a keen desire to take advantage of an open political system and an economic structure which with hard work brings obvious material benefits. Weimin Zhong is a member of a highly select group of Chinese students who began arriving in our country between five and ten years ago ablaze with the wish to follow their scientific curiosity and devoutly devoted to the opportunity they believed our country offered them.

Weimin was one supplicant begging for a dose of hard labor who didn't flinch when it came his way. He has distinguished himself as an absolutely fearless and unflagging experimenter able to successfully tackle many tasks at once and succeed in carrying them out. The interest in my laboratory, and Weimin's interest also, was to learn something about the genes that allow a mammalian embryo, a mouse embryo to be exact, to be accurately formed. His first project yielded information on how a particular protein helped liver cells to act correctly in adults and in newborn animals. But liver cells come specialized into being during embryogenesis outgrowths from the primitive gut. So Weimin was not content with these nice results on adults; he wanted some deeper insight into development. So he began experiments with *Drosophila* looking for a gene similar to the one he had studied in the mouse liver that would carry out similar tasks in flies and he found it. When the dust settled, Weimin had shown almost unbelievably that flies and mammals both utilize almost the exact same gene to control decisions required for organ development—and this after more than 500 million years of evolution.

—James E. Darnell

Honorary Degrees

Seymour Benzer

Seymour Benzer has had at least three different scientific careers. He started out as a solid state physicist who, when a graduate student at Purdue, came within a whisker of discovering the transistor. He then like many fell under the spell of Max Delbruck (the physicist turned biologist) and, after taking a phage course at Cold Spring Harbor in 1948, became an early recruit to the phage group.

I met Seymour the summer of 1954. He had just discovered that bacteriophage T4 rII mutants didn't grow on *E. coli* carrying the bacteriophage lambda. It was just one year after the Watson-Crick structure of DNA had been revealed. Because of this, some began to think about genetic codes and the detailed structure of genes. Seymour now had a tool with which to run the genetic structure of the gene into the ground. For the next 10 years he did so. Seymour then became a biochemist but only for a short while, I mention it today because it was a collaboration with Fritz Lipmann's lab here.

Not to get lost in biochemistry and this time under a direct admonition by Delbruck, Seymour decided to study behavior in the geneticist's favorite organism, the fruit fly, *Drosophila*. Here he has combined the genetic techniques of mutagenesis and selection, fate mapping and genetic mapping with molecular biological and neurophysiological tools to obtain mutants which affect sexual courtship, circadian rhythms, visual activity, brain and neural activity developmentally as well as in the adult.

Those who have worked with Seymour in the lab have all enjoyed their stay, for Seymour like few sees the science in the world about him. Few have contributed so much great science on so many subjects.

—Norton Zinder

J. Richardson Dilworth

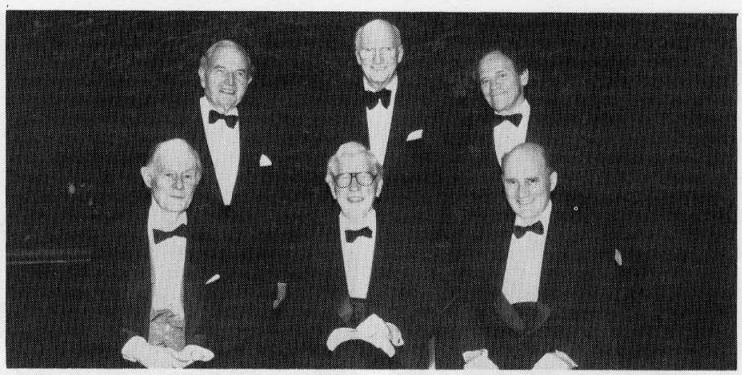
Our great moral teachers urge us to lead lives of service to others. Today we honor a superb role model of service. The name J. Richardson Dilworth is a synonym for service to the nation, the community, the sciences and to this university.

The public side of his remarkable career of service began in January 1942. Immediately after a mid-year graduation from Yale Law School, Dick Dilworth was commissioned as a naval officer and began work preparing a classic set of war time instructions for U.S. Merchant Vessels. He continued his service, thereafter, in the Pacific, with great distinction, but the important work of his early days of 1942 is still available in the Naval Historical Center at the Washington Navy Yard. In bold print, you can read the warning to the master of imperiled merchant vessels, "try to envision all eventualities and have a definite plan of action. Planning and foresight will foil many attacks," and in another section, some words of advice to those unfortunates who had to leave their ships — advice that may be applicable to us in these days of fiscal peril—"relax and conserve energy with the idea always present in mind of staying afloat." In fact, the document is colored by the courage and optimism that Dick Dilworth brings to every problem.

We honor all his talents today, but more than anything else his liberal bestowal of time and effort to be of service whenever the need arises. And this he has done not only for us, but for the Institute for Advanced Study, the Metropolitan Museum of Art, the American School of Classical Studies at Athens and the Carnegie Foundation for the Advancement of Teaching, just to name a few. Moreover, his major role as a key adviser and counselor to many of the most important financial and industrial organizations in this country is widely appreciated.

Here we know him as an involved member of our university, having served us as a trustee for more than 30 years. His role is by no means at an end. Increasingly, science will need an *amicus curiae*, friends like Dick in the courts that decide national priorities, someone to plead the cause of scientific enquiry as a service for mankind.

—Jules Hirsch



Honorary degree recipients *(front, left to right)* J. Richardson Dilworth, George Thorn and Seymour Benzer gather with *(back, left to right)* Chairman of the Executive Committee of the Board of Trustees David Rockefeller, Chairman of the Board Richard Furlaud and President Torsten Wiesel.

George W. Thorn

George Thorn is being honored today for his many contributions to the art and science of medicine. His career embodies those very qualities which we wish to instill in our present-day physician-scientists.

As a student of medicine, he was fortunate enough to select Dr. Frank Hartman as his mentor at the University of Buffalo School of Medicine. Hartman and his young colleague made the exciting discovery that adrenalectomized animals could be maintained on extracts of the adrenal gland, and later the Hartman-Thorn extract was employed successfully in the treatment of Addisonian crisis.

Residency training was followed by three years in the private practice of medicine. A year at the Massachusetts General Hospital, a year as an assistant professor of physiology at Ohio State, and then to the Johns Hopkins Medical Biochemistry Division—these opportunities allowed Thorn a broad grounding in the science of medicine. As the hormones of the adrenal and pituitary were isolated and synthesized, their individual functions unravelled, and methods developed for their assays, the career of the young endocrinologist flourished.

In 1942, at the age of 36, George Thorn was appointed the Hersey Professor of the Theory and Practice of Physics at the Harvard Medical School and physician-in-chief at the Peter Bent Brigham Hospital. This was an era of renal dialysis, heart valve replacement and kidney transplantation. In addition, Thorn initiated the joint Harvard-MIT program in bioengineering and the first comprehensive health care program supported by a major medical institution.

In 1953, Verne Mason, physician and friend to the late Howard Hughes, approached Thorn about the best use of funds for medical research. The rest is history. The "institute without walls" was established, and George Thorn was its guiding principal. The Howard Hughes Institute now plays a central role in the funding and training of biomedical scientists and has made a major contribution to our own university.

—Zanvil Cohn

President discusses state of university at two open meetings

(continued from page 1)

Professor Bruce McEwen, who is currently dean, will stay involved in the graduate program as associate dean and will continue to oversee the Science Outreach Program. Professor Peter Model and Associate Professor Marjorie Russel will remain associate deans, and Associate Professor Claude Desplan will remain assistant dean. Professor and Senior Physician Ralph Steinman will continue to be responsible for the M.D.-Ph.D. program.

Graduate program update

During the faculty meeting, Wiesel reported that the graduate program curriculum is under review.

"In my attempts to upgrade the program here I would like to see a few more first-rate and high-level graduate courses available to the students since we can't entirely disregard formal courses as an instrument in education," Wiesel said. "My effort will be directed towards stimulating the faculty to take a more active interest in the education of our students either by giving courses, tutorials or having other interactions with the students."

Next, Russel reviewed this year's graduate student admissions to Rockefeller's Ph.D. program, saying that this year's class was small, international, and made up of "uniformly top quality students" (see also *News&Notes*, May 14, 1993).

A discussion ensued about how to improve the number of applications from top schools and how to attract a greater percentage of accepted candidates. Russel said that she had written to faculty encouraging them to have their best students apply. Zinder added that he is committed to recruiting the best students to Rockefeller, and will make personal visits to the top undergraduate institutions to solicit their recommendations.

The quality of candidates entering the Tri-Institutional M.D.-Ph.D. Program was high again this year, Wiesel added. In response to a question during the staff meeting, Wiesel noted that, including the M.D.-Ph.D. candidates, about half of the new students are foreign and half, U.S. citizens.

Search committees

After announcing the appointment of three new investigators to the faculty—Associate Professor William Hall, Assistant Professor Ulrike Gaul, and Assistant Professor Ali Hemmati-Brivanlou—Wiesel emphasized that the ongoing effort to recruit new faculty is essential to both the financial and academic future of the university.

Wiesel said that while the search committees have been effective in generating names for junior appointments, they have had less success in the senior rank. "This is a good time to make plans for the future," he said, "to decide in which areas the university should be strengthened and perhaps have a more deliberate search than the standing committees allow."

Wiesel suggested a more personal approach may be needed to recruit senior faculty, and welcomed suggestions on a mechanism to do this. The university will still recruit junior faculty, but will focus on specific areas of research. For the coming year, the six search committees now in place will remain but their role will be expanded to include future academic planning and development of the curriculum.

In the context of making Rockefeller an attractive place for faculty, a few members of the audience advocated the continued funding of weekly seminars in the Junior Faculty-Student Seminar Series.

During the staff meeting, a member of the audience asked why there were not more women on the faculty. Wiesel replied that he was proud to have recruited Professor Mary Elizabeth Hatten to Rockefeller, and that he hoped that other women would also be appointed to senior positions during his presidency.

Another person asked about the status of junior faculty who did not head their own labs. Wiesel replied that head of lab is an administrative title, and the university judges its faculty members, both heads of lab and otherwise, on the quality of their work. Status as head of lab by itself does not affect promotion decisions, but clear evidence of independent research is an important factor.

Financial overview

At both the faculty and staff meetings, Fred Bohen, executive vice president and chief operating officer, gave an overview of the university's financial condition. (See also *News&Notes*, June 4, 1993.)

"We started this decade with a serious gap between the income to support the university's ongoing operations and our expenses," Bohen said. "By the summer of 1990, that gap had grown to roughly $12.3 million on a $110 million annual operating budget. We have made a lot of progress over the last two years, largely through cost reduction but also with some help on the income side, thanks to our immensely strengthened development program. We've brought the deficit down to about $4.4 million this year, and we're projecting a budget deficit next year of $3.1 million. We've taken care of about 75 percent of our problem in three years of constant effort and belt-tightening."

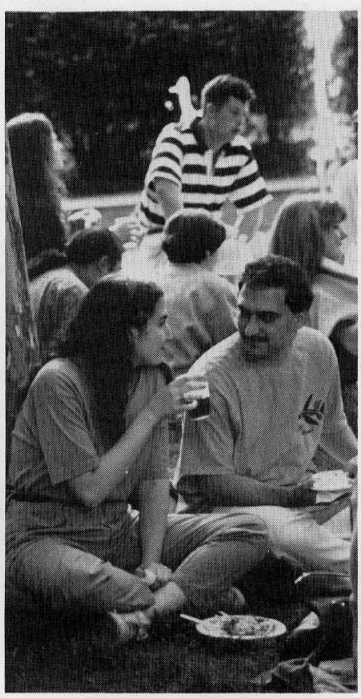
One person questioned the administration's financial commitment to the student program. Wiesel replied that the administration has not cut back funds available to students, although there has been a change in the method by which funds are distributed. Bohen added that despite the university's difficult fiscal situation, renovations to the Graduate Students Residence have continued over the past several years.

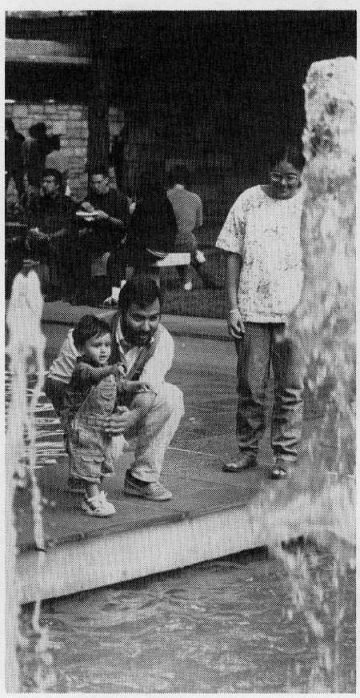
Another question—submitted in writing in one of the question boxes available for this purpose—asked about the raises for the housing staff rumored to be 12 percent. Bohen explained that this percentage reflects an increase in the base salary of a relatively small number of the university's least well paid workers, both in housing services and in other departments. This adjustment addressed a significant disparity between their wages and those of others at the university and at neighboring institutions.

Members of the audience also suggested rebuilding the ramp outside the Graduate Students Residence, upgrading the Tower elevator and replacing the cafeteria carpet. In response to a question about direct deposit of paychecks, David Lyons, vice president for business and finance and treasurer, mentioned that he was looking into installing an automatic teller machine on campus.

Before calling the meetings to a close, Wiesel reiterated that he welcomes comments and suggestions from the community. He holds office hours from 2:15 to 3:15 P.M. on Fridays. Call the President's Office, x8080, to make an appointment.

Scientists and staff savor sunny, summer supper





The annual Rockefeller University barbecue June 4 drew an enthusiastic crowd to the fountains by Abby Aldrich Rockefeller Hall.

Potpourri

Tri-Institutional Noon Recital
The St. Lawrence String Quartet will play works by Beethoven and Schumann at the Tri-Institutional Noon Recital today (June 18). The quartet, which has played at the Opera de la Bastille in Paris, the Corcoran Gallery of Art in Washington, D.C. and the Isabella Stewart Gardner Museum in Boston, has won numerous awards, including first prize at the Banff International String Quartet Competition and the Young Concert Artists International Auditions.

The Saturday Brass Quintet, winner of the 1990 Naumburg Chamber Music Award, will play works by Bach, Gabrieli, Danielpour and Lutoslawski at the last Tri-Institutional Noon Recital of the season on Fri., June 25.

The concerts, to be held in Caspary Auditorium at noon, are free.

Spraying
Weather permitting, the trees and shrubs on campus will be sprayed Sat., June 26, from 6:00 A.M. to noon. The rain date is Sat., July 10. The Grounds Department recommends that those on campus that day stay out of direct contact of the spray, close windows, turn off air conditioners, and keep pets inside. For more information, call James Sullivan, x8001.

SURF journal club
A journal club has been organized by Rockefeller University graduate fellows for Summer Undergraduate Research Fellow (SURF) students. The journal club will meet on Monday nights, starting June 21, at 5:30 P.M., in Caspary 1A and 1B. All undergraduate students working in Rockefeller laboratories are welcome. For more information, contact the Deans' Office, x8086.

Sweat Shirt Shop sale
The Sweat Shirt Shop, Rockefeller Research 133, will hold its final sale of the season Tues., June 22, from 11:30 A.M. to 1:30 P.M.

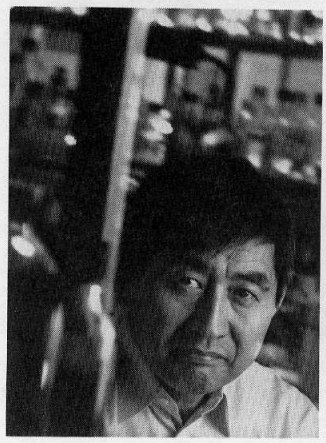
Seminar
David Ferster, professor at Northwestern University, will give a lecture entitled "Origin of Receptive Field Properties in Visual Cortex" Fri., July 2 at 11:00 A.M. in Tower 301. All are welcome.

Honors
President Torsten Wiesel was elected to the Board of Overseers of Harvard College earlier this month, to serve from June 10 of this year through commencement day in 1999. In addition, Wiesel recently delivered two commencement addresses—at the University of Connecticut, where he also received an honorary degree, and at the Cornell University Medical College and Graduate School of Medical Sciences.

Award
Heather Williams, Rockefeller alumna (Class of '85) and adjunct professor in the Nottebohm lab, has been awarded a 1993 MacArthur Award from the John D. and Catherine T. MacArthur Foundation of Chicago. The fellowships aim to free exceptionally gifted individuals from economic constraints so they can develop their talents.

RU scientist wins research award

Professor Hidesaburo Hanafusa is the winner of the prestigious 1993 Alfred P. Sloan, Jr., Prize for Outstanding Basic Science Contributions to Cancer Research, awarded by General Motors Cancer Research Foundation. The foundation cited Hanafusa's "pioneering work with chicken viruses that laid the foundation for the discovery that cancer is caused by damaged genes within a patient's own cells" as well as his latest work with the *crk* oncogene. The award will be presented on June 23 at the National Academy of Sciences/ Engineering in Washington.



Professor Hidesaburo Hanafusa

Memorial service honors RU investigator

President Torsten Wiesel delivers an address at the unveiling of a new footstone for renowned Rockefeller investigator Hideyo Noguchi (1876-1928) at Woodlawn Cemetery last Friday. Also present were *(left to right)*: Hisamitsu Omori, author of a guidebook concerning the Dr. H. Noguchi Monument, Hiromoto Seki, ambassador and consul general of Japan, Samuel S. Koide, senior scientist at the Population Council, Hideo Sekiyama, acting president of the Dr. H. Noguchi Memorial Association of Japan and Tomoko Hori, also of the memorial association.

Revson/Winston fellowships
The Charles H. Revson Foundation and Rosita Winston Foundation Fellowships in Biomedical Research have been awarded to Postdoctoral Fellows Diana R. Cundell of the Tuomanen lab, Kim Hunter of the Hatten lab, Eva Luderus of the de Lange lab, Erika Matunis of the DiNardo lab, Raphael Mayer of the Chua lab and Riqiang Yan of the Darnell lab. The selection committee of Rockefeller faculty judged candidates on the basis of scientific merit and the ability to do original and independent research.

Aaron Diamond fellowships
Aaron Diamond Foundation Postdoctoral Research Fellowships in the Biomedical and Social Sciences have been awarded to Cheng-ming Chiang of the Roeder lab, Lynne Claye of the Kreek lab, Kalle Saksela of the Baltimore lab and Jun Yin of the Pfaff lab. The fellowships begin July 1 and last for at least two years.

Marriage
Chris Min, M.D.-Ph.D. student in the Sakmar lab, married Amy Kim of Brookings, South Dakota, in May. Following a ceremony in the bride's hometown, the newlyweds honeymooned in Greece.

French classes
The university-funded beginner/ intermediate French language class is scheduled to finish at the end of this month. Postdoc Paul Haynes is trying to organize an independent French class, to meet one hour each week. Anyone interested in the class should contact Haynes, x7578. All are welcome.

New computer products
Several new products are available in the Classroom/User Area, Smith Hall A21 for evaluation.

The Macintosh Centris 610, which comes with the new Macintosh mouse, is two times faster than the MacIIci and IIvx. It is attached to an external cartridge drive and connected to the university network via *ethernet*, allowing for faster and more reliable file transfers to other Macs on the network (such as at Media Resources).

The Apple Adjustable Keyboard, attached to the MacIIci, is ergonomically designed for ease of typing. It also has palm rests and the spacebar is larger than usual. It comes with an extended keypad with programmable function keys.

Finally, a Kensington Turbo Mouse, available on the MacIIsi, is a trackball—a mouse alternative consisting of a stationary ball which is rotated with the fingers. Those making detailed drawings may want to try this product, which allows for finer movements.

***News&Notes* schedule**
News&Notes will be published on a monthly basis in July and August.

Correction
Due to a printer error in which a photo was printed in reverse, a caption in the June 4 issue of *News&Notes* misidentified Security Guard Ian Huggins as Sergeant Vivian Jones and *vice versa*.