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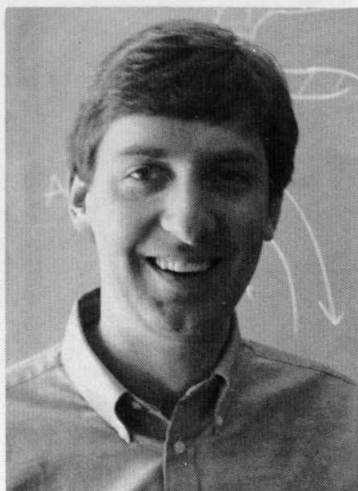
news & notes

December 9, 1994 Volume 5, Number 12

The Rockefeller University

Meyer Foundation gives \$300,000 for fellows in physics and biology center

Joseph Benner



Rockefeller fellow John Marko, who studies DNA supercoiling, is the first Meyer fellow.

The Center for Studies in Physics and Biology recently received a \$300,000 grant from the Meyer Foundation to support the Center's Fellows Program. Center fellow John Marko has been named the first Meyer fellow.

"We are grateful for the Meyer Foundation's contribution to our new center," said President Torsten Wiesel. "The director of the center, Professor Mitchell Feigenbaum, and I are honored that the foundation has chosen to support this unique program encouraging young physicists who wish to study biological problems."

Inaugurated in October, the new center was created to accelerate the contributions that physics can make to biological science. The fellows program, which was modeled after

the one at the Institute for Advanced Study, is designed to bring exceptional young physicists to the center for a minimum two year advanced postdoctoral appointment.

Marko is studying polymer physics as applied to DNA supercoiling. He is interested in the description of topological changes that result when DNA is transcribed into RNA; in models for chromosome condensation and decondensation and the role in these processes of membrane-associated proteins; and in the relaxation of chiral conformational fluctuations in linear polymers with twist stiffness.

Marko completed a Ph.D. in 1989 at the Massachusetts Institute of Technology, working with A. Nihat Berker on structure and scaling at first and second order phase transitions. He did postdoctoral work in theoretical condensed matter physics at The James Franck Institute, The University of Chicago, from 1989 to 1991, and at Cornell University, from 1991 to 1994.

The Meyer Foundation was formed by Philippe Meyer, son of the late French banker, André Meyer. Meyer is a physicist affiliated with the Laboratory of Theoretical Physics at the Center for National Scientific Research at the

Biochemist to give Friedheim lecture next week

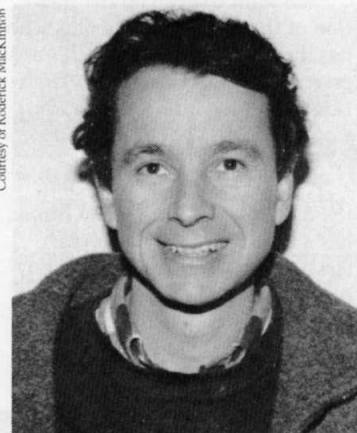
Biochemist Paul T. Englund will lecture on "Replication of the Mitochondrial DNA Network of Trypanosomes" at the Ernst A.H. Friedheim Memorial Lecture Fri., Dec. 16. Englund is professor at Johns Hopkins University School of Medicine and a Rockefeller alumnus. The lecture will take place at 3:45 P.M. in Caspary Auditorium. All are welcome to attend.

University of Paris South. Since 1973, the Meyer family has contributed over \$4 million to a number of programs at Rockefeller, including the endowment of the André and Bella Meyer Chair, which is currently held by Professor George Cross.

"Our fellows, competitive for tenure track appointments elsewhere, are here for interdisciplinary research, for which Rockefeller is ideal," said Feigenbaum. "Considering the difficulties encountered in the established channels of support for cross disciplinary work, we are grateful for Meyer's support, and especially this early in the center's existence."

Neurobiologist to speak on ion channels

Courtesy of Roderick MacKinnon



Roderick MacKinnon will lecture on the structure of ion channels today (Dec. 9).

Roderick MacKinnon, associate professor in the department of Neurobiology at Harvard Medical School, will speak on "Structure from Function in the Shaker K Channel" at the Friday lecture today (Dec. 9).

MacKinnon studies how the structure of ion channels enables them to selectively control the flow of ions like potassium, sodium, or calcium across the cell membrane. Channels do this by regulating movement of a gate that obstructs their ion pathway, usually in response to a specific signal. To gather clues to ion channel structure, MacKinnon combines electrophysiological measurements of channel function with the molecular genetic technique of site-specific mutagenesis.

Recently, MacKinnon has been exploiting the known molecular structure of a peptide scorpion toxin that binds extremely tightly to the extracellular entryway of potassium channels to provide structural information about this critical region of the protein.

"Rod is one of the leaders in the race to map the three-dimensional surface of potassium channels and, in particular, to identify the amino acids that interact with potassium ions on their journey through the channel," said Professor David Gadsby, who will introduce

'tis the season... for a party

Everyone on campus is invited to join the annual holiday party, which will take place Thurs., Dec. 22 from 2:30 P.M. to 4:30 P.M. in Tower Cafe. All members of the university community will soon receive invitations, and children are especially welcome.

A dance band will play throughout the festivities and a buffet will serve international fare. Special children's activities will be offered in Tower lobby, and carolers will lead those who are interested in singing seasonal songs. Mr. and Ms. Santa Claus will, of course, drop by.

To accommodate the celebration, the cafeteria will close for lunch; full breakfast service will be available from 7:30 A.M. to 9:30 A.M.



2 The ice rink cometh

3 The hostage brain

4 Holiday items

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Skaters on campus warm up to ice-skating rink

Building the skating rink atop the tennis court is an annual ritual of winter at Rockefeller, and Ambrose Cheung, assistant professor in the Gotschlich-Fischetti lab, is canvassing the campus for volunteer builders. Depending on the weather and the volunteers, installation will take place on a Saturday in the next few weeks.

"We want to keep up the tradition of the rink," said Cheung, who has three skating children. "It's a pretty good rink," said John Aitchison, a postdoc from Canada who works in the Blobel lab. "We got a lot of use out of it last winter."

The rink, which dates back to the days of President Detlev Bronk, has a loyal following. Two years ago, volunteers raised funds to buy new plywood to protect the tennis court. "There is a hard-core group of people who hate to see such a beautiful facility go to waste," said

Cheung. Said Eugene Roth, supervisor of the carpenter shop, "Everyone always asks, when can we skate? I tell them, ask mother nature."

Volunteer builders assemble after carpenter shop staff have laid the foundation. Their task? To gradually unfold a 40- by 100-foot piece of industrial strength plastic wrap and simultaneously pour in a river of water from a firehose.

"Stretching the plastic in the right way is critical to avoid air bubbles underneath," explained Cheung. By the end of the six-hour procedure, a veritable pond ripples alongside York Avenue—a thin pond, to hasten freezing.

Picking a day for pouring the prospective ice is tricky. First of all, there's the comfort of the volunteers to consider. "Last year, it was two degrees above zero when we built the rink," recalled Roth. "I was okay, though. I wore my Coast

Guard heavy-weather suit."

Aitchison also has fond memories of that day. "Maybe it was a little cold. But it was fun."

The ideal installation day is also windless: One year, Roth recalled, a heavy gust blew the underlining clear across York Avenue.

To many, building the rink, however arduous, is a labor of love. "I definitely plan to use it. I skated a lot back home in Switzerland," said volunteer builder Ursula Flückiger, guest investigator in the Gotschlich-Fischetti lab. "We hope to skate more this winter," said Aitchison, who plans to take his four year old, Sarah, skating.

The Children's School takes the oldest children skating "when enough parents volunteer to lace all those skates," said Marjorie Goldsmith, director. "We'd love to take advantage of the rink more." The Children's School lends its small inventory of skates (in children's and adult sizes) to members of the university community. Skates may be signed out at the Children's School office, on the ground floor of GSR.

The university is contributing to

Kay Locitzer



Cabinetmaker Sam Rivera drives in a bolt in the ice-rink foundation.

the maintenance of the rink during the skating season, and anyone wishing to volunteer to build or maintain the rink may reach Cheung at x8163.



Last winter, ice hockey aficionados faced off on the RU rink.

Campus opens A.T. M. machine

Joseph Bonner



Benefits specialist Kristin Gross uses the new A.T.M. machine, located near the vending area in Rockefeller Research Building. "This is in response to many requests from the staff for a safe, on-campus A.T.M.," said David Lyons, vice president for business and finance. "We would like to thank George Candler for his assistance in finding this location." The machine, which accepts cards from the NYCE, Plus, and Cirrus networks, is owned and maintained by The Chase Manhattan Bank.

MacKinnon

(continued from page 1)

MacKinnon today. "He has made seminal contributions to our present understanding of what potassium channels look like."

MacKinnon earned an M.D. from Tufts University School of Medicine in 1982. He was then medical house officer in internal medicine at Beth Israel Hospital, Harvard Medical School. In 1985, he began an N.I.H. Postdoctoral Fellowship, which he completed at Brandeis University. In 1989, MacKinnon returned to Harvard Medical School as assistant professor in the department of cellular and molecular physiology. He transferred to the department of neurobiology in 1991, and became associate professor in 1992.

MacKinnon is a member of Alpha Omega Alpha, the medical honor society. He is a PEW Scholar in the Biomedical Sciences and the recipient of the McKnight Scholars Award.

The lecture will be held in Caspary Auditorium at 3:45 P.M. and preceded by tea at 3:15 P.M. in Abby Aldrich Rockefeller Lounge. All are welcome.

Letter to the Editor

My family and I would like to thank our many friends at The Rockefeller University for their expression of sympathy and kindness during our period of bereavement. May God forever bless you all.

Alzatta Fogg
Dining Room Supervisor

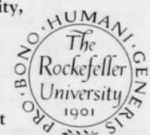
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Understanding the organ of understanding

New book from RU Press explores multiple influences shaping human brain

by Susan Blum

"There is nothing in the known universe to compare with the human brain." So reads the first line on the first page of the new book, *The Hostage Brain*, written by Rockefeller Professor Bruce McEwen and veteran science journalist Harold Schmeck, Jr. In the next 300 or so pages, the authors show just how wondrous the brain is.

The publication of the book by the Rockefeller University Press was celebrated this past Wed. (Dec. 7) with a reception, preceded by a presentation during which McEwen and Schmeck discussed some of the book's major concepts. In an interview before the event, McEwen explained that the book is informed by a central idea that gave rise to its captivating title.

"The brain is not just a construct where thoughts are formed," he said. "It is an organ of the body, one that is capable of change not just during development but also in adult life." Hormones, diseases, emotions, thoughts, and experiences—all these and more impinge on the brain, McEwen said. In other words, "the brain is influenced—or held hostage—for good or for ill by many different kinds of forces."

The book explores those forces in its 16 chapters. Among the effects on the brain are the surprising interactions that occur between the brain and the immune system, with hormones from the immune system affecting the brain, and the brain innervating immune cells and bombarding them with neurotransmitters and hormones. The book also describes the devastating impact of neurological diseases such as Alzheimer's and schizophrenia. It chronicles the impact of our inner biological clocks on memory, alertness, and mood. It tracks the effect of aging on the brain. And it explores the impact of a wide range of experiences such as learning, stress, and interpersonal relationships on the body's most complicated organ.

Hormones influence the brain

Forming the centerpiece of some chapters, and woven through many others, are explorations of the effect of hormones on the brain. Throughout the life course, these molecular messengers influence the structure, organization, and function of the brain by controlling the expression of genes.

In the embryo, for instance, the presence or absence of the male



Professor Bruce McEwen (right) and veteran New York Times reporter Harold M. Schmeck teamed up to write a book on the brain.

hormone testosterone (produced in the testes, and itself ultimately determined by the presence or absence of a particular gene) determines whether the developing brain will take on male or female features. These features include characteristic structural differences, as well as different susceptibilities to various neurologic diseases and, some researchers believe, certain differences in intellectual skills and emotional styles.

The effect of sex hormones remains strong in adulthood. In adult female rats, for instance, estradiol, a female hormone, engenders new nerve-to-nerve connections in a brain region called the hippocampus during certain times in the rat's reproductive cycle. For this and other reasons, estradiol is a promising candidate for the treatment of Alzheimer's disease, which involves a loss of cells in the hippocampus, the brain region that plays a large role in memory.

Nor are sex hormones the only ones to affect the brain. Stress hormones, such as cortisol, also play a role in shaping the developing brain and in influencing adult brain function and behavior. Studies in species as different as rats, primates, and humans have produced much evidence showing that exposure to stress in utero can make newborns irritable and hyperactive throughout their lives, and that adults suffering from prolonged exposure to stress hormones may undergo profound damage to their hippocampus. On the brighter side, however, newborn rats stressed in utero can escape the ill effects of their experi-

ence if gently handled in the first weeks after birth.

Knowing the role of nature and nurture

These complex interactions between brain, hormones, and experience go straight to the heart of the debate about nature vs. nurture or, otherwise put, heredity vs. environment. This debate, which waxes and wanes in cycles, has heated up once again in current discussions of the biologic basis of such complex traits as homosexuality or intelligence.

In McEwen's view, such a debate is based on the fundamental misapprehension that biology equals the genes. "The impression communicated in much of the current discussion is that genes determine everything, and that there is very little room for environmental influence.

"But biology is not just the genes," he asserts. "Throughout the body, and especially in the brain, there exist very complex regulatory systems, in which genes are regulated by the internal and external environment"—in other words, by factors such as hormones and the experiences that stimulate them. These environmental influences "play a big role in how, when, and to what extent certain genes may be expressed," says McEwen.

Many of McEwen's insights into the hostage brain come from work in his own laboratory, which focuses on the effect of sex and stress hormones on the brain. He first caught the bug for communicating these insights when he gave the Mirsky Christmas lectures for high school

students in 1973. Subsequent experience as a spokesperson for the Society for Neurosciences, and as the faculty director of Rockefeller's Science Outreach Program, strengthened his interest in reaching out to the nonscientific public to broaden their understanding of how the brain works.

Teaming up

But being a scientist is different from being a science writer. So, three years ago, McEwen teamed up with Harold Schmeck, a veteran science reporter who had recently retired from *The New York Times*. Schmeck's distinguished career covering scientific research provided him with a treasure trove of experience and anecdotes to make the science come alive. "What is marvelous about working with Harold is that he can pull out from his files and his memory bank all these real life examples of the scientific issues we discuss," says McEwen.

Together, the two authors worked with scientific illustrator Lydia Kibiuk to produce a book that aims to "reach out to every level of scientific understanding, and to allow people who are not scientists to learn about the brain." McEwen hopes that the book will be read by interested lay people, and also used in high schools, adult evening schools, and certain medical school settings.

Each audience may take from the book different levels of understanding, but McEwen hopes that every reader will hear the book's fundamental message. He says, "If you're a hostage, then there has to be a ransom, or a way of breaking the bonds. And that involves using our intelligence to understand how the brain works. Many of our most vexing problems—violence on our streets, stress in our lives, anxiety, mental illness—are problems of behavior and brain function that can be addressed more effectively by understanding how the brain operates and how it can change.

"The challenge to all of us is to use our brains to understand our brains and our behavior, because, in the end, our brains are mainly hostage to one thing: ignorance."

Hardcover and softcover copies of The Hostage Brain are available from the RU Press Order Service, x8572 or fax x7944. There is a 20% discount for RU personnel.

Potpourri

Holiday bake sale

Gift baskets and other holiday items will be available at the bake sale today (Dec. 9) in the Tower lobby. The sale, which benefits The Rockefeller University Children's School, will be held from 8:30 A.M. to 3:30 P.M.

Tri-Institutional Noon Recital

Elaine Comparone, harpsichord, and Jerry Willard, guitar and lute, will perform works by Johann Sebastian Bach, Manuel Ponce, Manuel de Falla, Domenico Scarlatti, and Eddie Lang at the Tri-Institutional Noon Recital today (Dec. 9). The concert, to be held in Caspary Auditorium at noon, is free. All are welcome.

Courtesy of the artists



Elaine Comparone (left) and Jerry Willard perform at the Tri-Institutional Noon Recital today (Dec. 9).

Holiday sweat shirt sale

The Sweat Shirt Shop's annual holiday sale will be held Mon., Dec. 12 and Tues., Dec. 13 from 10:00 A.M. to 4:00 P.M. in the Tower lobby. All proceeds will benefit the RU Children's School.

Clinical Research Seminar

Terry Fulmer, associate professor at the Columbia School of Nursing, will speak on "Clinical Models for Nursing Care of the Elderly" at the Clinical Research Seminar Wed., Dec. 14 at noon in Nurses Residence 110B.

Toy and food drive

The Children's School is collecting new toys and nonperishable food items on behalf of Yorkville

Common Pantry for distribution to the poor and homeless over the holidays. Leave donations, unwrapped, at the school, on the ground floor of Graduate Students Residence, by Tues., Dec. 14.

Seminar

Norman Christ, professor of physics at Columbia University, will speak on "Quark Gluons and High Speed Parallel Computers" at the High Energy Physics Seminar Thurs., Dec. 15 at 2:00 P.M. in the B level conference room in Smith Hall Annex.

Hotel discount

The Housing Office is offering a holiday special to all Rockefeller University faculty, students, and employees for the last three weekends in December. On Fridays, Saturdays, and Sundays only and subject to availability, rooms at Abby Aldrich Rockefeller Hall will be "two nights for the price of one." To make reservations, call x8500.

Call for mentors

The Science Outreach Program needs volunteers to mentor teachers and students next summer, and to visit schools and give workshops and lab tours. Anyone interested should contact Bonnie Kaiser, x7431, or e-mail, bonnie.

Grant deadlines

All applications due between Mon., Dec. 26 and Mon., Jan. 2 should be brought into the Office of Sponsored Programs by 3:00 P.M. Thurs., Dec. 22 for review and signature. Voice mail messages left at x8054 during the holiday week will be promptly answered.

Green cards

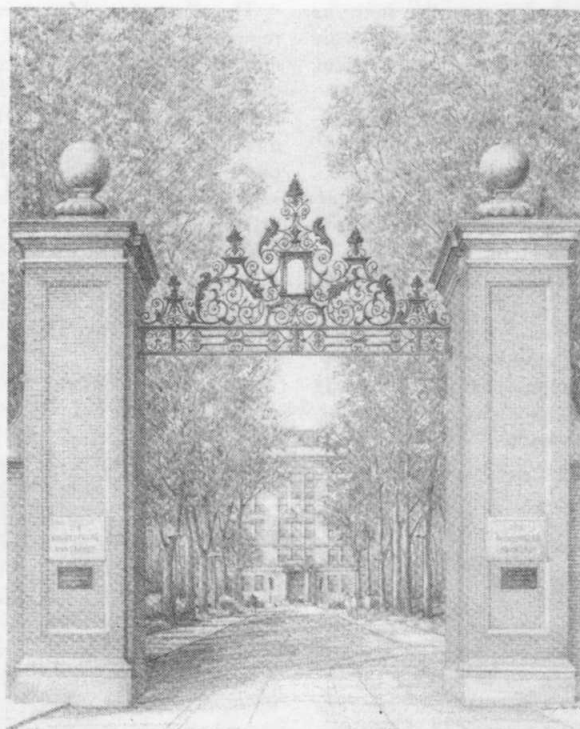
Permanent residents who possess green cards with an I-151 notation are required to obtain new cards or apply for citizenship before March 20, 1995. After this date, anyone who possesses the old card may be denied reentry to the U.S. after an absence abroad and will not be permitted to apply for permanent resident status for family members. Applications for new green cards must be filed with the local I.N.S. district in which the permanent resident lives—Manhattan, Newark, or Hartford—and not with the university. Further information on application requirements is available from Kerry Harvey in the Personnel Office, x8302.

Sweet celebration



In an elaborate contribution to the holiday season, Jon Polcyn (back row, second from left), executive chef, Food Services, led his staff in gingerly building a gingerbread house, now on display in Tower Cafe. His confection has a ginger snap roof, graham cracker walls, black licorice windowpanes, a pretzel fence, marshmallow smoke, and chocolate wafer shutters.

Gift idea



Blank cards featuring a drawing by Chen-Ju Sun of the 66th Street gate and historical landmark Founder's Hall are on sale at the Media Resource Service Center. The package of 15, which includes envelopes, costs \$7.