

MCDB News

SPRING 2003

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VICE PRESIDENT OF HHMI SPEAKS AT SECOND ANNUAL PRISCILLA CONNELL MEMORIAL LECTURE

Wednesday, April 3, 2002 marked the second year of the Priscilla Connell Memorial Lecture. Dr. Gerald Rubin, Vice President of the Howard Hughes Medical Institute (HHMI) and Professor of Genetics at the University of California, Berkeley, was this past year's invited speaker. He presented his talk on "Biological and Computational Annotation of the *Drosophila* Genome Sequence."

Dr. Rubin is one of the leading researchers in the field of developmental genetics, utilizing the fruit fly, *Drosophila melanogaster*. He first received international acclaim in 1982 for his work with Allan Spradling, describing a technique for the introduction of genes into the germ line of fly. It remains the only way to insert foreign or altered genes into the fly's genome and helped to usher in the "*Drosophila* revolution" of the 1980s. His laboratory went on to establish the fly eye as one of the premier systems for studying communication between cells during development. More recently, he has been widely recognized as the leading force behind the sequencing of the fly genome.



In 1991, Dr. Rubin and his colleagues started the Berkeley *Drosophila* Genome Project, which intended to sequence the entire genome of the fly and provide genetic tools to facilitate the analysis of individual genes. With the help of Craig Venter from Celera Genomics, Inc., the sequence of the fly genome was published in 2000. Analysis of the sequence revealed even more similarities between flies and humans than had previously been

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This lecture was made possible by a generous endowment by Mr. Paul Connell, in loving memory of his wife Priscilla Harrison Connell. Priscilla Connell was a renowned nature photographer whose work has appeared in Sierra Club and Audubon Society magazines and calendars, as well as other notable publications. One of her photographs has been featured on a U.S. postage stamp, and she has won the Roger Tory Peterson award for her breathtaking simplicity in capturing the beauty of nature.



CHAIR'S CORNER A MESSAGE FROM ERAN PICHERSKY

Greetings! This is MCDB's second year in existence, and it has certainly been as exciting as the first. On the University level, we had the departure of LSA's dean Shirley Neuman, a strong champion of MCDB, and the appointment of Alan Saltiel as the new director of the Life Science Institute. Also, Mary Sue Coleman was inaugurated as the thirteenth president of the University of Michigan. President Coleman has had a long scientific career as a professor and researcher in the biomedical area.

With all these changes, and despite some negative effects from the less-

than-perfect financial situation of the state and the University, we have continued to develop the strengths of our department. New faculty have been hired (see p. 5), and the number of undergraduate students concentrating in our programs (Cellular and Molecular Biology, and the jointly managed Biology) has continued to increase. All our faculty, with the exception of those retiring this year, are currently conducting research funded by external sources, which means that they are able to take undergraduate and graduate students into their labs for hands-on experience in molecular biology.

Indeed, our undergraduates consistently tell us that working in a professor's lab is one of the highlights of their undergraduate experience at the University of Michigan, and that such experience is often crucial in shaping their future plans and careers.

The continued success of MCDB faculty in teaching, research, and service at the local, national, and international levels is a source of satisfaction for all of us. I am confident that the years to come will see even a better, more successful department.

Howard Crum began studying German at Western Michigan University, and was called to serve as a cryptographer for the U.S. Air Force during World War II. After the war, he spent a summer at the U-M Biological Station, and consequently changed his major to botany. Upon graduation from Western Michigan University, Crum came to the University of Michigan for his Ph.D., then went to Stanford University for three years of postdoctoral work.

Crum accepted a position as Curator of Cryptograms for the National Museum of Canada in Ottawa. In 1965, Howard Crum returned to the University of Michigan as Associate Professor of Botany, later to become a full professor and Chair of the Department of Botany.

During his career, he produced treatments of both North and South American mosses, publishing over 100 taxa new to science. His research culminated in the publication of *Mosses of Eastern North America*, a collaborative work with Dr. Lewis Anderson of Duke University. The compilation took nearly 30 years to

continued on top of next page

IN MEMORIAM

ALFRED S. SUSSMAN 1919-2001

On November 19, 2001 Professor Emeritus of Botany Alfred Sussman passed away at the U-M Hospital in Ann Arbor. The funeral was held on March 8, 2002 in the University Commons. Shokrollah Manzoor, an Iranian Jewish artist and a relative of the family, dedicated his March exhibit at the Washtenaw County Jewish Center, entitled "Images of the Holocaust," to the memory of Dr. Sussman.

Alfred Sussman began his career at the University of Michigan in 1950, shortly after completing his Ph.D. at Harvard University. During the next forty years, he served as Chair for the Department of Botany, Dean of the Horace H. Rackham School of Graduate Studies, and as interim Vice President for Academic Affairs and for Graduate Studies and Research. In 1972, Dr. Sussman received the

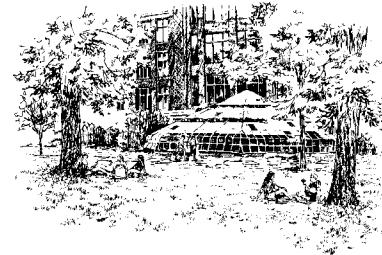
University of Michigan's Distinguished Faculty Achievement Award, and was acclaimed "a model of all that is best in academic life."

Although Alfred Sussman retired in June of 1990, he continued to maintain his research lab with the Department of Biology for several years afterward. His work at the University focused primarily on the pink bread mold *Neurospora* and its regulation of metabolic processes based on chemical and environmental factors.

Sussman was preceded in death by his wife of 48 years, Selma. He is survived by his second wife, Eleanor, daughter Jean, sons Paul and Harold, sister Evelyn Feit, and four grandchildren.

HOWARD A. CRUM 1922-2002

Howard Alvin Crum, Professor Emeritus of Botany, died at his home on April 30, 2002. Known for his energetic teaching style and keen wit, Crum was a mentor for many graduate students and a counselor to many undergraduates.





complete, identifying over 750 different species.

Howard Crum is survived by his wife Irene, daughter Mary Crum Scholtens, son Roger, and four grandchildren. Memorial contributions may be made to the Howard A. Crum Memorial Fund at the U-M Biological Station, 501 E. University, Dennison Bldg., University of Michigan, Ann Arbor, MI 48109.

FRANCIS C. EVANS 1914-2002

Professor Emeritus of Zoology Francis Cope Evans passed away on August 16, 2002 following a short illness. The memorial service was held at St. Andrew's Episcopal Church in Ann Arbor on September 28.

Dr. Evans was educated first at Germantown Friends School, then Haverford College. After graduation, he went to study ecology as a Rhodes Scholar at Oxford University, and did postdoctoral work at the University of California, Berkeley, the Hooper Foundation in San Francisco, and the University of California, Davis. In 1943, Francis returned to Haverford as a professor, and in 1944 he was named acting dean.

Francis Evans came to the University of Michigan in 1948, and was appointed Professor of Zoology in 1959. During the 34 years that Evans served the University, he acted as Associate Director of the E.S. George Reserve and editor for publications of the Museum of Zoology. After his retirement in 1982, he served as President of the Ecological Society of America, from which he received a Distinguished Service Citation in 1989.

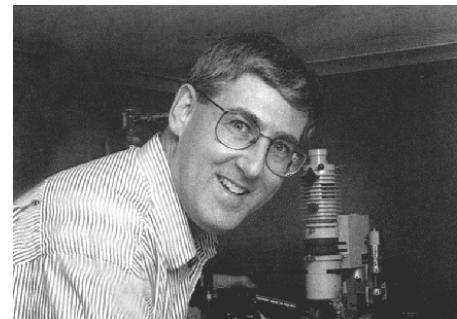
Evans is survived by his wife Rachel, sons Kenneth and Richard, daughters Rachel and Rev. Katharine Cope Evans, and five grandchildren.

RICHARD HUME AND CHARLES YOCUM HONORED FOR OUTSTANDING CONTRIBUTIONS IN BIOLOGY

Two senior professors, Richard Hume and Charles Yocum, have been honored with prestigious awards for their research and work with students.

Neurobiologist Dr. Richard Hume has been awarded the Margaret and Herman Sokol Award from the Rackham Graduate School for promoting excellence in the sciences and graduate education. Over the past several years, Dr. Hume has played an active role in shaping the Neurobiology Graduate Program. Presently, he is the Director of the Interdepartmental Neuroscience Graduate Program, and in the past he has acted as Associate Chair for Curriculum of the Biology Department. He has also won the LS&A Award for Excellence in Teaching, as well as the University of Michigan Neuroscience Faculty Excellence Award.

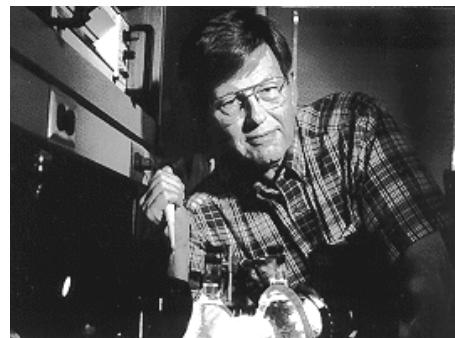
Dr. Hume follows the philosophy that graduate students should be treated as "junior colleagues," contributing their own research and ideas as an integral part of the lab environment. He often recruits new students by holding potlucks at his home, and he schedules annual retreats where students and faculty can interact in a relaxed, informal setting. Each year,



Richard Hume

his students in the Neuroscience Program host a symposium where graduates choose their own guest speakers.

Dr. Charles Yocum has been granted the John Simon Guggenheim Foundation Fellowship for research in cell biology. The award is presented to distinguished professionals from the U.S. and Canada working in the humanities, creative arts, natural sciences, or social sciences. Dr. Yocum's research focuses on the set of proteins called photosystem II. The primary purpose of photosystem II is to harvest the energy of the sun, releasing oxygen as a byproduct of this reaction. In 1981, he developed a process to isolate this protein complex, and from this development stemmed his current research issues. This breakthrough is the basis for most research on photosynthesis around the world, and his 1981 paper describing this process has been cited over a thousand times.



Charles Yocum

Each year, the John Simon Guggenheim Foundation receives 3000-3500 applications and selects approximately 200 scholars and artists to receive one-year grants. This year, Dr. Yocum was one of two professors nominated from the University of Michigan, and one of 187 candidates selected overall.



EMERITUS HONORS

Wesley M. Brown, Ph.D., retired on May 31, 2002 and was named by the Regents of the University as Professor Emeritus of Molecular, Cellular, and Developmental Biology and Professor Emeritus of Ecology and Evolutionary Biology. Dr. Brown was a founding member of the research field that uses DNA to identify individuals and infer relationships between individuals and species. He joined the University of Michigan faculty in 1980, and served as both Associate Chair and Chair of the Department of Biology. From 1983-1998 he acted as an Assistant Curator, then Curator, in the Museum of Zoology, and he was elected President of the Society of Molecular Biology and Evolution in 1995.

John P. Langmore, Ph.D., was named Professor Emeritus of Molecular, Cellular, and Developmental Biology and Research Scientist Emeritus in the Biophysics Research Division upon his retirement on December 31, 2002. Dr. Langmore is known for his leading work in electron microscopy and his models for nucleosome structure. He also taught the first course in genomics at the University of Michigan. Dr. Langmore became a member of the faculty at the University in 1979, and has taught in both the Biology Department and the Biophysics Research Division. From 1989-1995 he served as Chair for the Biophysics Research Division and the Biophysics Graduate Program, and in 1993 he coordinated the move of Biophysics from its location on North Campus to its current place in the chemistry complex.

EXTERNAL GRANTS AWARDED TO MCDB FACULTY IN 2002

Adams, Julian	NIH	Ciprofloxacin Resistance and Compensatory Mutations
Bardwell, James	NIH	Functional Analysis of a Protein Folding Catalyst
	NIH	How Are Disulfides Transported Across Membranes?
Bodmer, Rolf	NIH	Combinatorial Genetic Control of Cardiac Cell Type Specification: The Even-Skipped Lineage
Cadigan, Kenneth	NIH	Tissue Specificity of Wingless Signaling in <i>Drosophila</i>
Denver, Robert	NSF	The Neuroendocrine Stress Axis in Amphibian Development and Physiology
Hay, Jesse	NIH	Neuronal Ykt6 Protein Interactions and Targeting
Jakob, Ursula	NIH	Functional Analysis of Hsp33-A Redox Regulated Chaperone
Klionsky, Daniel	NIH	Alternative Vacuolar Targeting Mechanisms in Yeast
Maddock, Janine	NIH	Characterization of the <i>Vibrio harveyi</i> CgtA Protein
	NIH	Proteomics of <i>B anthracis</i> Membrane and the Spore Proteins
Olsen, Laura	USDA	The PTS2 Protein Import Pathway of Plant Peroxisomes
Pichersky, Eran	NSF	The Role of Terpene Synthases on Floral Scent in <i>Arabidopsis thaliana</i> and Related Species
	BARD/ USDA	Functional Genomics of Citral Biosynthesis in Aromatic Plants: Pathway Elucidation and Applications

FACULTY HIGHLIGHTS

Julian Adams was on sabbatical this past year. He acted as a reviewer for the Howard Hughes Medical Institute's Professor award and was invited to speak in Aussois, France, at the Symposium on Long Term Experimental Evolution with Microbes.

Marc Ammerlaan was an invited speaker at the Provost's Seminar on Teaching, 2002. He continued as the overall director for the Howard Hughes Outreach Program for High School Teachers.

Robert Bender served as Chair Elect of the Physiology and Metabolism Division of the American Society for Microbiology. He was asked to give repeat talks of his "Tragic Tale of Typhoid Mary" and was an invited

speaker on AIDS to the International Development and Health Association.

Ken Cadigan hosted this past year's Priscilla Connell Memorial Lecture.

Robert Denver began serving as Associate Chair for Undergraduate Curriculum.

Santha Jeyabalan was selected by the College as a Senior Lecturer.

Jianming Li was a lecturer for a summer course in plant molecular physiology at Beijing University, China. He also was a member on an NSF Grant Panel.

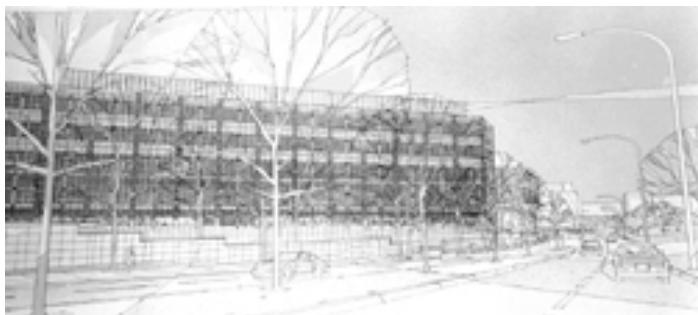
Janine Maddock was elected Chair of Division J of the American Society for Microbiology.



DISTINGUISHED PROFESSOR NAMED AS CHARTER MEMBER FOR LSI

The Department of Molecular, Cellular, and Developmental Biology is pleased to announce that Professor Daniel Klionsky has been named as one of the six charter members of the Life Sciences Institute.

The Institute has been undergoing construction since April 2001 and is scheduled to open Fall 2003. This 100 million dollar complex will draw together some of the most talented scientists from both the central and medical campuses. Structured around an ideal of a "lab without walls,"



professors from the areas of genetics, biochemistry, cellular biology, and many other disciplines in the life sciences will share open lab spaces that fluctuate as research projects change.

As a charter member, Dr. Klionsky will be directly involved in launching the Life Sciences Institute. "It is a great opportunity, but it can also be intimidating," observes Klionsky. "The challenge is to merge two cultures, two different schools and multiple departments, all run in

different ways." Initially, he will be involved in the selection process for new faculty brought into the institution. The goal is to identify leading scientists who welcome the

opportunity to work in a highly interactive environment. Including the six charter members and Alan Saltiel, Director of the Life Sciences Institute, the LSI complex will eventually house between 20 and 30 faculty members, as well as over 300 graduates, postdoctoral fellows, and undergraduate researchers.

Although Dr. Klionsky will be transferring his laboratory facilities to the Life Sciences Institute, he will continue to maintain his tenure and teach classes for the Department of Molecular, Cellular, and Developmental Biology. In conjunction with his move to the LSI facilities, Dr. Klionsky has also been awarded a Collegiate Professorship.

HAVE YOU VISITED MCDB'S NEW WEBSITE?

In conjunction with a new website for the College of Literature, Science, and the Arts (LSA), the MCDB home page has been redesigned and has many innovative features. The new site offers a cleaner, more consistent and professional look, including easier navigation and customized pages for specific audiences, but the real improvements go far beyond redesign. The engine behind the site's changes is called a "content management system" (CMS), which allows for quick and easy updates to pages by professors and staff. LSA is one of the few colleges in the country to have such a system, and MCDB is proud to be the first department in the College participating in this project.

Please visit our new home at
<http://www.lsa.umich.edu/mcdb/>

The new LSA website can be viewed at
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WELCOME NEW FACULTY

MOHAMMED AKAABOUNE

Dr. Mohammed Akaaboune is originally from Morocco. He received his DEA and Ph.D. in neuroscience from the University of Pierre and Marie Curie in Paris, France, and his doctorate was awarded with highest honors. His post-doctoral work was spent as a research associate at Washington University School of Medicine in St. Louis, Missouri. This past year Dr. Akaaboune joined our department as an Assistant Professor.



Dr. Akaaboune's research focuses on synaptic plasticity at the neuromuscular junction in living animals. Already in his career, Dr. Akaaboune has distinguished himself by developing several new research techniques. He was awarded the highly prestigious Human Frontier Science Program Postdoctoral Fellowship, and he was a finalist in the 1999 James L. O'Leary Prize Competition in Neuroscience. He also has been a National Institute of Health, French Medical Research, and French Muscular Dystrophy Association Fellow.



VICE PRESIDENT OF HHMI SPEAKS

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suspected. For example, over 50 human genes linked to a specific disease have closely related genes in the fly. Dr. Rubin hopes to use the powerful genetic information available in *Drosophila* to shed light on how the genes function in humans.

Dr. Rubin's seminar highlighted the historical context of his work, as well as more recent research in progress. His presentation style was refreshingly self-effacing. For example, he

commented that during his Ph.D. work in the early 1970's, it took him three years to sequence one small fly gene. He cheerfully added that at the height of the fly genome sequencing effort, his Ph.D. productivity was being matched every ten seconds. He also predicted that it would take 300 years to accurately annotate the fly genome (i.e., fully understand the biological role of each gene). He finished his talk by describing some of his lab's recent studies using bioinformatics and genomics to understand particular groups of genes.

Dr. Rubin graduated from the Massachusetts Institute of Technology in

1971. He received his Ph.D. from Cambridge in 1974 and went to Stanford University School of Medicine for postdoctoral work. After junior faculty positions at Harvard Medical School and the Carnegie Institute, he arrived at the University of California, Berkeley in 1983. Currently he divides his time between his laboratory and HHMI headquarters in Chevy Chase, Maryland. Dr. Rubin has received many awards, including the Newcomb Cleveland Prize from the American Association for the Advancement of Science (once in 1983 and again in 2000). In 1987 he was elected a member of the National Academy of Sciences.

MCDB JOINS THE PROGRAM IN BIOMEDICAL SCIENCES

This past academic year, the Department of Molecular, Cellular, and Developmental Biology joined 12 other departments participating in PIBS, the Program in Biomedical Sciences. PIBS is a gateway program that permits students to file a single application, while allowing them access to Ph.D. programs in both the Medical School and the College of Literature, Science, and the Arts.

The primary goal of PIBS is to give students the opportunity to explore the many diverse and cutting edge research ongoing at the UM. During their first year, students rotate between labs of their choosing, immersing themselves in hands-on research and taking core courses in genetics, biochemistry, and cell biology.

After completing of the year, they work with a mentor to finalize choices of a Ph.D. program.

According to Dr. John Kuwada, Associate Chair of Graduate Studies, MCDB is one of the few departments in PIBS outside the Medical School. The Department benefits the program because much of the underlying research for medicine comes from the genetic, cellular and molecular analysis of model organisms. As he explains, "MCDB's emphasis on the analysis of genetic model organisms such as the fruitfly, zebrafish, and the *Arabidopsis* weed offers students the opportunity to examine the foundations of biological processes common to many organisms."

While students may still apply to individual departments, PIBS allows

graduates to explore multiple disciplines and to change their fields of study during the first year with minimal disruptions. "It really is an intellectual incubator," remarks Mary Carr, Coordinator of Graduate Studies for MCDB. Often, students apply who are unsure where they want to go with their degrees and who wish to try more than one field before pursuing a degree. PIBS allows graduates a certain amount of flexibility, and can help them see connections with other areas of expertise.

The admissions process to PIBS is highly competitive. Of nearly 700 applicants, fewer than 80 entered the program last year. The Department of Molecular, Cellular, and Developmental Biology admits up to six Ph.D. candidates from PIBS.



HAVE YOU THOUGHT OF MAKING THE MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY DEPARTMENT ALUMNI ENDOWMENT PART OF YOUR ESTATE PLAN?

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