

> David Oxtoby
Named President
of Pomona College

David W. Oxtoby will assume his new duties as the ninth president of Pomona College on July 1, 2003. Located in Claremont, California, Pomona College is one of the top-ranked colleges in the country.

Oxtoby has served as Dean of the Physical Sciences Division at the University of Chicago for eight years, was Director of the James Franck Institute for three years, and has been a member of the Chicago faculty since 1975. He is the co-author of more than 165 scientific articles and the co-author of two internationally popular textbooks in chemistry. During his tenure as Dean, Oxtoby has overseen the initiation of the Division's \$135-million campaign, including the planning for the new Interdivisional Research Building.

> Robert Fefferman
Named Dean of the
Physical Sciences Division

Mathematician Robert Fefferman has been appointed Dean of the Physical Sciences Division and will serve a five-year term beginning July 1.



Fefferman, who is the Louis Block Professor in Mathematics and former Chair of the Department (1995–2001), specializes in harmonic analysis, partial differential equations, and probability theory. He joined the Chicago faculty in 1975 and is a recipient of the University's Llewellyn John and Harriet Manchester Quantrell Award for Excellence in

Undergraduate Teaching and is a Fellow of the Alfred P. Sloan Foundation. He is very active in mathematics education outreach, having worked for the past fifteen years with public school teachers at all levels, from elementary through senior high school. He received a bachelor's degree in mathematics from the University of Maryland in 1972 and a Ph.D. from Princeton University in 1975.

> University of Chicago
Mathematics Program Adopted by
New York City Schools

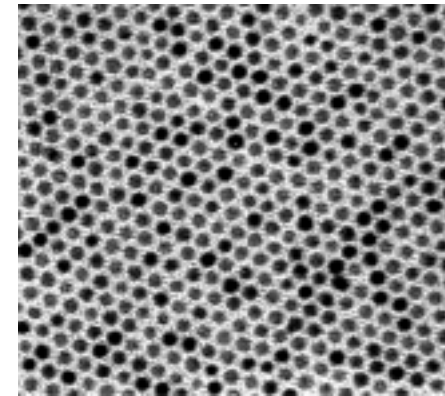
Everyday Mathematics, a curriculum developed at the University of Chicago for kindergarten through fifth-grade students, has been chosen for use in New York City public schools. Impact Mathematics (an offshoot of Everyday Mathematics) will be implemented in sixth through eighth grades.

The Everyday Mathematics program, which is already in use in some NYC schools, is based on textbooks and hands-on exercises that teach math skills with blocks and other materials. Students are encouraged to devise their own ways of solving a math problem, thinking through the process first instead of just memorizing. The program also teaches several ways of solving a math problem, including both traditional approaches and more simplified ways.

The adoption of Everyday Mathematics by such a large educational system is a powerful endorsement of the success of this curriculum. For more information on the program, go to <http://everydaymath.uchicago.edu>.

> Consortium for Nanoscience
Research Created

The University of Chicago has combined forces with Argonne National Laboratory to create a \$1-million Consortium for Nanoscience Research that will provide an incubator for the next generation of nanoscience researchers.



Building on the strengths of both institutions, this Consortium will focus on four thematic areas: quantum materials, bio-nano composite structures, adaptive nanoscale self-assembly, and nanophotonics. The goal of the Consortium is to use joint appointments at both Argonne and the University to attract the very best researchers to the Chicago area. At this writing, the Consortium has twelve

senior fellows and several postdoctoral associates from both institutions, including Heinrich Jaeger, Professor in Physics and the College, who serves as Consortium Director.

There are two specific benefits of this partnership: access to Argonne's Advanced Photon Source; and Argonne's new Center for Nanoscale Materials, a major user facility that will be equipped with the instruments needed to synthesize and characterize nanomaterials. A contribution of \$36 million from the state of Illinois will be used for construction.



Heinrich Jaeger

> The Search for Extra Dimensions Continues

Particle physicists, cosmologists, and string theorists gathered at the American Association for the Advancement of Science's annual meeting to discuss the possibility of extra dimensions to help explain several current theories or disprove old ones, such as the Standard Model.

The Standard Model is used to describe the most elementary particles and the forces that hold them together. According to experimentalists, however, there seems to be more particles and forces than are necessary. Extra dimensions may be able to help explain these data inconsistencies.

According to theorists, string theory requires that space-time contain up to seven extra dimensions if it is to include gravity. Extra dimensions could also help solve two cosmological mysteries: What were the initial conditions of the universe and what is the mysterious dark energy that is accelerating the expansion of the universe?

Although scientists do not have direct evidence of extra dimensions at this time, experimentalists and theorists alike feel confident that they are only a few years away from a scientific revolution.

> PSD to Award
Honorary Degrees

Every year, the Division of Physical Sciences nominates individuals to be presented with an honorary degree from the University of Chicago. By long tradition, honorary degrees are conferred only for outstanding contributions to scholarship or to scientific research.

The degree is awarded to persons whose contributions have not yet been extensively recognized by the receipt of major awards or honorary degrees, although many do go on to receive such accolades. For example, Stephen Hawking received an honorary degree from Chicago in 1981. Recipients of the 2003 Doctor of Science degrees are Persi Diaconis from Stanford University, who has been described as "one of the most influential figures in the development of modern probability theory"; Ryoji Noyori from Nagoya University for his research in organometallic chemistry; and Patrick Thaddeus from Harvard University for his work in molecular astrophysics, a new interdisciplinary field that unifies astronomy and chemistry.

> PSD Creates Space Planning Committee

Dean David Oxtoby appointed a committee in January, which is chaired by Simon Swordy of the Department of Physics, to evaluate and plan space needs for the Division for the next ten years.

The goal of the committee is to prepare a strategy to guide the move into the Interdivisional Research Building in 2005, making sure that this plan is consistent with the strategic directions of the Division and the changes anticipated in science in the next decades.

Ten faculty members representing all areas of the Division have been asked to provide input on anticipated changes in student numbers and pedagogy, as well as staffing and space needs. For example: What departments are expected to grow in the next ten years? What changes and directions in teaching and research are envisioned, desired, or to be avoided in the next decade? What are the estimated areas for collaboration with other divisions, departments, or institutions? The recommendations of this committee will be integrated into the overall University space plans for the future.



> FACULTY NEWS AND HONORS

Sidney Nagel, the Stein-Freiler Distinguished Service Professor in the Department of Physics, has been elected to the National Academy of Sciences.

Angela Olinto, Associate Professor in the Department of Astronomy & Astrophysics, has been named Chairperson of that department.

David MacQueen, Professor in the Department of Computer Science, has been appointed Chairman of that department.

Yoishiro Nambu, the Henry Pratt Judson Distinguished Service Professor Emeritus in the Department of Physics, has been awarded the N. Bogoliubov Prize from the Joint Institute of Nuclear Research for his fundamental contribution to the theory of color quarks.

Rustem Ismagilov, Assistant Professor in the Department of Chemistry, has received an award from the Arnold and Mabel Beckman Foundation for his work using microfluidics to control chemical systems in time. He also received a Young Investigator Award from the Office of Naval Research.

Chuan He, Assistant Professor in the Department of Chemistry, was selected as a 2003 Searle Scholar.

Michael Hopkins, Professor in the Department of Chemistry, has been appointed Chairman of that department for a three-year term.

Pavel (Paul) Wiegmann, Professor in the Department of Physics, the James Franck Institute, and the Enrico Fermi Institute, has received the Humboldt Research Award for Senior U.S. Scientists from the Alexander von Humboldt Foundation.

Sergey Kozmin, Assistant Professor in the Department of Chemistry, has been selected as an Alfred P. Sloan Fellow for 2003.

Hisashi Yamamoto, Professor in the Department of Chemistry and the College, received the prestigious "Medal with Purple Ribbon" from His Majesty the Emperor of Japan in November 2002.

Laurie Butler, Professor in the Department of Chemistry, the James Franck Institute, and the College, has been elected a Fellow of the American Physical Society Division of Chemical Physics for her fundamental and pioneering contributions to the understanding of non-adiabatic effects in molecular photophysics and photoreactivity.

Heinrich Jaeger, Professor in the Department of Physics, the James Franck Institute, and the College, has been elected a Fellow of the American Physical Society Division of Condensed Matter Physics for his fundamental contributions to the study of granular systems, mesoscopic self-assembly, and flux flow in superconductors.

James Cronin, Professor Emeritus in the Departments of Physics and Astronomy & Astrophysics, has been elected to the Russian Academy of Sciences by the Joint Institute for Nuclear Research.

For the most up-to-date information, please go to the Division of Physical Sciences webpage at <http://physical-sciences.uchicago.edu>

> Visiting Committee Members Serve as Advocates for the Physical Sciences Division

Visiting Committees were established by the University's Board of Trustees in 1948 to create groups for each of the academic units that would help foster relationships between the University and its alumni, between faculty and Trustees, and between the University and the city of Chicago.

They serve the University by increasing the understanding of their members about the work of the divisions, giving the University national and international visibility, and providing an informed group that can be of assistance to the divisions. Visiting Committee members bring a wealth of experience and expertise to their units, as well as help keep the

divisions relevant to the world at large. Over the years, some of the links to industry that have proven to be most valuable have been facilitated by members of PSD Visiting Committees. Visiting Committee members are appointed by the University's Board of Trustees to serve renewable three-year terms. Members are asked to attend two meetings on campus each year, in the spring and autumn. Each visit includes an update by the Dean and the PSD Visiting Committee Chairman, science presentations by faculty members, tours of laboratories, and opportunities to meet with graduate and undergraduate students who are studying science.

The Visiting Committee to the Physical Sciences is comprised of the following members:

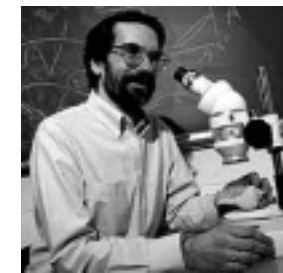
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Steven Kersten	Gene Zeffren
Richard Keyser	
Leon Lederman	

> Give the Gift of Real Estate

Have a vacation home that you're not using? Giving a piece of real estate to the University of Chicago removes the burden and cost of selling and allows you to claim up to the entire fair market value as a charitable deduction. For more information, contact Mary Heagley, Director of Development for the Physical Sciences Division, at mheagley@uchicago.edu or 773-702-8939.

> Fossil Record Reflects Recent Flowering of Marine Biodiversity

The apparent increase in marine biodiversity over the last 50 to 100 million years is real and not just a false reading produced by the inconsistencies of the fossil record, says a team of paleontologists led by David Jablonski.



This finding, published in the May 16 issue of *Science*, may help scientists place the future of global biodiversity in its proper context.

"If you want to understand what's going to come in the future, you need to understand the dynamics that led up to the biodiversity we see now," said Jablonski, the William Kenan, Jr., Professor in Geophysical Sciences and Chair of the Committee on Evolutionary Biology at Chicago.

By some measures, up to 50 percent of the increase in marine animal biodiversity during the last 50 million years can be attributed to what paleontologists call "the pull of the recent."

This is the idea, posed in 1979 by University of Chicago paleontologist David Raup, that the level of biodiversity is inflated in younger fossil deposits because sampling of the modern world is so much more complete than in the geologic past.

Harvard University paleontologist Richard Bambach lauded the science study as a major step toward dispelling lingering doubts about the true extent of biodiversity during the Cenozoic Era, which began after the dinosaurs became extinct 65 million years ago and continues today.



> NEW FACULTY APPOINTMENTS

Mark Ghiorso has been named a Professor in the Department of Geophysical Sciences. A computational petrologist, he studies how rocks form from fluid magma using the principles of thermodynamics to model the complex many-component systems that occur in nature. He was most recently at the University of Washington's Department of Earth and Space Sciences.

Aaron Dinner has been appointed an Assistant Professor in the Department of Chemistry, the James Franck Institute, and the Institute for Biophysical Dynamics. A theoretical physical chemist, his work spans biophysical chemistry, protein folding, quantum mechanical models, and simulations of signaling at the cellular level. He comes to Chicago from Berkeley.

Paul Seidel joins the Department of Mathematics as a Professor. His work in the area of symplectic topology connects topology to algebraic geometry and other areas, including string theory. He was most recently at Imperial College in London.

Alexei Khokhov has been appointed Professor in the Department of Astronomy & Astrophysics. A computational astrophysicist who studies supernova explosions and numerical relativity, he joins the University from the Naval Research Laboratory.

If you have questions, comments, or suggestions about this publication, please contact the Dean's Office at 773-702-7950.

Division of the Physical Sciences
The University of Chicago

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> PHYSICAL SCIENCES TEACHING PRIZES

Three graduate students have been selected to receive the 2003 Physical Sciences Teaching Prize by the Physical Sciences Collegiate Division and the Division of Physical Sciences. This year's winners are Guilherme Gualda, Geophysical Sciences; Jennifer Miller, Chemistry; and Allan Wilson, Chemistry.

The prizes—\$750 and a certificate—are presented annually to graduate students to recognize exceptional teaching of undergraduates in the physical sciences. University students, faculty, and staff submit nominations. The prize winners will be cited in the program of the College Honors Awards Assembly.

T H E U N I V E R S I T Y O F C H I C A G O

physical sciences

O N E W S L E T T E R

A Note from the Dean

After more than twenty-seven years at Chicago, it will indeed be hard for me to leave this University. As described elsewhere in the newsletter, I am moving to California to become president of Pomona College. I will miss my many colleagues and friends here in Chicago but do hope to stay in touch.



The University of Chicago is a very special place. It combines the highest traditions of scholarship and of teaching in a way that is unique in the country and in the entire world. The passion of its students and faculty for learning new things is legendary, creating an extraordinary atmosphere of intellectual activity. At the same time, Chicago is also a very supportive place in

which everyone is encouraged to do his or her very best.

In my seven-and-a-half years as Dean, I have been proud to help bring more than fifty new faculty to the Division and to help to lead the space planning process for our future needs. I have particularly enjoyed the chance to meet many of our loyal alumni in the course of my travels around the country. The Division and the University are in good hands, and I anticipate a very bright future.

David Oxtoby
Dean

- > Astronomy & Astrophysics
- > Chemistry
- > Computer Science
- > Geophysical Sciences
- > Mathematics
- > Statistics
- > Physics
- > Enrico Fermi Institute
- > James Franck Institute
- > Institute for Biophysical Dynamics