



Tilghman to step down as University president in June

Shirley M. Tilghman, president of Princeton University since 2001 and a leader in the fields of science and American higher education, will step down as Princeton's 19th president at the end of this academic year. Tilghman informed the Board of Trustees of her decision at the board's regular September meetings.

"Shirley Tilghman has provided exceptional leadership for Princeton over these past 11 years, building on its distinctive strengths and pioneering important new initiatives in areas ranging from neuroscience, energy research and the arts to internationalization and campus life, while also providing national leadership on a broad range of issues," said Kathryn A. Hall, chair of the Board of Trustees. "We are deeply grateful for her service as president, and we are very pleased that she will remain a member of our faculty."

In a letter emailed to all students, faculty, staff and alumni, Tilghman said "I believe that together we have made Princeton a stronger and more vibrant University." There is a "natural rhythm to university presidencies," she said, and with "major priorities accomplished or well on their way to being realized, and the [recently completed \$1.88 billion Aspire fundraising] campaign successfully concluded, it is time for Princeton to turn to its 20th president to chart the path for the next decade and beyond."

In the early years of her presidency, she said, "I learned about the many things we do exceedingly well and must preserve as our first priority, but I also identified aspects of the University where we could do better and where we needed to grow. ... I am exceedingly proud of what we have accomplished over the past 11 years. Together," she said, we:



Photo by Denise Applewhite

Shirley M. Tilghman has announced that she will step down as president of the University in June. Tilghman, Princeton's 19th president, has led the University since 2001. Above, she enters the University Chapel for the Opening Exercises ceremony in September.

Continued on page 2

Campus construction, renovation projects move forward

EMILY ARONSON

The start of the academic year marks milestones for campus construction projects, including the final phase of Princeton University's solar collector field, which will produce solar power to support the University's annual electrical needs.

Following a summer buzzing with activity, progress on new buildings and renovated facilities will continue this fall. Among the next steps for ongoing projects: Interior work will begin at the Neuroscience and Psychology buildings; the foundation will be laid for the Andlinger Center for Energy and the Environment; and demolition will commence to make way for the new Lakeside graduate community.

Updates on the following projects were provided by the Facilities Organization units, including the Department of Campus Energy and Utilities, Grounds and Building Maintenance, the Office of Design and Construction, and the Office of Real Estate Development, which oversee different projects within the University's 10-year Campus Plan.

Solar collector field: Installation of the solar collector field, comprising 16,500 photovoltaic panels, is nearly



Photo by Mahlon Lovett

Installation of the University's solar collector field, comprising 16,500 photovoltaic panels across 27 acres in West Windsor, is scheduled to be completed this fall. The system will produce solar power to support the University's annual electrical needs.

complete. The 5.3-megawatt system is now being tested in phases and an official opening celebration is scheduled for October. Located on 27 acres in West Windsor adjacent to Princeton's main campus, the collector field

will be connected to the University's main campus electric power distribution system, and is anticipated to meet between 6 and 8 percent of the University's annual electrical needs when fully operational. New landscap-

ing on the site will screen the panels from nearby Washington Road, Lake Carnegie and the Delaware and Raritan Canal towpath.

The University worked with SunPower Corp., a global solar technology company with East Coast offices in Trenton, N.J., to design and build the system. Key Equipment Finance, based in Superior, Colo., will fund and own the system, and will lease it to Princeton.

Neuroscience and Psychology buildings: Exterior work on the 248,000-square-foot, two-building project designed by José Rafael Moneo Vallés Arquitecto of Madrid is expected to finish early this fall. The state-of-the-art complex features energy-efficient outer walls composed of two "skins" of artisan glass with a three-foot-wide space for air circulation inserted between them. Construction will continue on the interior of the building through this fall, including electrical, mechanical and plumbing work. The new home of the Princeton Neuroscience Institute and the Department of Psychology, located south of Icahn Laboratory along Washington Road, is expected to open in fall 2013.

Continued on page 5

What's inside?

- Office serves as town-gown bridge **4**
- Aspire campaign exceeds fundraising goal **6**
- Bakos hunts for extrasolar planets **8**



Rouse selected as Wilson School dean **3**

To our readers

Beginning with this issue, the Princeton University Bulletin is moving to a bimonthly publication schedule, for a total of five issues from October to June during the 2012-13 academic year. A full publication schedule is available at www.princeton.edu/bulletin.

The reduction in publication is part of continuing sustainability efforts across campus, as well as changes in readership habits. Before fall 2009, the paper was published weekly during the academic year. In 2009-10, the Bulletin moved to a biweekly publishing schedule during the academic year, for a total of 15 issues. In 2010-11, the Bulletin shifted to a monthly publishing schedule during the academic year, for a total of 10 issues.

The Bulletin includes news and feature stories, most of which are originally published on the Princeton homepage at www.princeton.edu, the primary source for news about the University. Due to the publication schedule, the Bulletin will no longer include the "Nassau Notes" events section and calendar listing.

A list of University event calendars may be viewed at www.princeton.edu/main/news/events/calendars, and campus community members may use online submission forms to suggest news stories or offer event notices for publication online at www.princeton.edu/main/news/share.

The new rate for paid subscriptions to the Bulletin is \$5 for the academic year. Anyone may subscribe by sending a check payable to Princeton University to Office of Communications, 22 Chambers St., Suite 201, Princeton, NJ 08542.

Faculty and staff members who wish to opt out of home delivery of the Bulletin — as well as manage their subscriptions to other campus publications — may visit the University's online subscription management Web page at www.princeton.edu/main/link/options.

For questions about the changes, contact Managing Editor Ushma Patel at upatel@princeton.edu. For subscription questions, contact Subscription Manager Elizabeth Patten at epatten@princeton.edu. ♥

Spotlight



Photo by Denise Applewhite

Name: Jessica Dagci

Position: Special collections assistant at Marquand Library of Art and Archaeology. Managing day-to-day operations and maintaining the library's substantial rare books collection. Hiring, training and supervising student and casual workers. Handling facility upkeep, including sophisticated electronic security and climate control systems. Helping to coordinate the work of four support staff. Ensuring continuity of service and enforcement of policies, and sharing on-call duties to respond to emergencies.

Quote: "I love working with students. I just finished a master's degree at Teachers College, Columbia University; working with students made me want to pursue that and continue to work with students in higher education, helping them become effective citizens. It's great working with so many amazing students and colleagues. Working with rare books is wonderful, too. We have some really remarkable items in the collection. We have people from around the world who come to consult the collection because Marquand is one of the premier art libraries in the world."

Other interests: Gardening. Bicycling. Getting involved in animal welfare and environmental issues. Creating original vegetarian recipes in various cuisines.

Tilghman

Continued from page 1

- Expanded the undergraduate student body and launched the four-year college system.
- Greatly increased the number of students on financial aid and more than doubled the average aid they receive.
- Created a master plan for the future development of the campus that has guided thinking about architecture, landscaping and sustainability.
- Echoed the evocative beauty of the historic campus with the addition of Whitman College, while moving briskly into the 21st century with Lewis Library and Sherrerd Hall.
- Created the Lewis Center for the Arts and brought the creative and performing arts into their rightful place in the curriculum.
- Created the new Princeton Neuroscience Institute and achieved a radical makeover of the chemistry department by constructing a new Frick Laboratory and recruiting a new generation of world-class faculty.
- Saw the Center for African American Studies leap into the forefront of its field, defining how ethnic studies will be conceived in the future.
- Looked increasingly outward with a global perspective, as reflected in Bridge Year students spending their first year as Princetonians abroad [28 students this year have deferred their freshman year to pursue service projects in Peru, Senegal, India and China] or in Global Seminar students studying with Princeton faculty all around the world during the summer.
- Took pride in the thriving of the humanities, with students pursuing certificates in humanistic studies and faculty publishing ground-breaking books.
- Rose to the challenge of sustaining life on the planet by creating the Grand

Challenges Program in the Princeton Environmental Institute and founding the Andlinger Center for Energy and the Environment.

- Conducted conversations about the relationship between the University and the eating clubs and the rightful place for Greek organizations on campus with the best interests of Princeton's students foremost in our minds.

Tilghman concluded her letter by saying that after a year's leave she intends to "return to the faculty and to my other passion — teaching — in the years to come. In the meantime," she said, "there is still a lot to do this year!"

A native of Canada, Tilghman came to Princeton in 1986 as the Howard A. Prior Professor of the Life Sciences. From 1993 through 2000 she chaired Princeton's Council on Science and Technology, which encourages the teaching of science and technology to students outside the sciences, and in 1996 she received Princeton's President's Award for Distinguished Teaching. She initiated the Princeton Postdoctoral Teaching Fellowship, and in 1998 she was named the founding director of the Lewis-Sigler Institute for Integrative Genomics. Elected by the faculty to serve on the search committee when Princeton's 18th president, Harold T. Shapiro, announced his intention to step down, she was eventually asked to leave the committee so she could be considered for the position. She was elected Princeton's 19th president on May 5, 2001, and assumed office on June 15, 2001.

In 2002, Tilghman was one of five winners of the L'Oreal-UNESCO Award for Women in Science and the following year she received the Lifetime Achievement Award from the Society of Developmental Biology. In 2007, she was awarded the Genetics Society of America Medal for outstanding contributions to her field. A member of the National Research Council's committee

that set the blueprint for the U.S. effort in the Human Genome Project, she also was one of the founding members of the National Advisory Council of the Human Genome Project for the National Institutes of Health (NIH). She is renowned not only for her pioneering research but for her national leadership on behalf of women in science.

In 2009-10, Tilghman chaired the board of the Association of American Universities, which represents 61 leading U.S. and Canadian research universities, and she has provided national leadership on issues ranging from college affordability and the federal investment in basic research to immigration policy and accountability. She serves as a trustee of the Carnegie Endowment for International Peace, Leadership Enterprise for a Diverse America, and the King Abdullah University of Science and Technology, and as a director of Google, Inc.

A regular attendee at student athletic and artistic events, Tilghman has held open office hours and has continued to teach throughout her presidency, both in the molecular biology department and in the freshman seminar program. She is co-teaching a course this fall on modern genetics and public policy with history and public affairs professor Keith Wailoo.

The search for Tilghman's successor will be led by Hall. The search committee will include nine members of the Board of Trustees (including Hall), four members of the faculty who will be elected by the faculty, two undergraduates, a graduate student and a staff member. "This search process is modeled after previous processes that have worked very well for Princeton and we look forward to active participation from all of Princeton's key constituencies, including faculty, students, alumni and others," Hall said. "We will provide further information soon about the process and the composition of the

search committee. Obviously our highest priority will be to identify the best possible person to serve as Princeton's 20th president, and I hope very much that we will be ready to bring a recommendation to the Board of Trustees in the spring."

Administrative support for the search committee will be provided by Vice President and Secretary Robert K. Durkee, who can be reached at durkee@princeton.edu. ♥

PRINCETON UNIVERSITY BULLETIN

www.princeton.edu/bulletin

Managing editor
Ushma Patel

Lead designer
Maggie Westergaard

Contributing writers
**Emily Aronson, Michael Hotchkiss,
Morgan Kelly, Jamie Saxon**

Photographers
Denise Applewhite, Mahlon Lovett

Subscription manager
Elizabeth Patten

The Princeton University Bulletin (© 2012 The Trustees of Princeton University) is published bimonthly from October through June to coincide with the academic year. The Bulletin is published by the Office of Communications, 22 Chambers St., Suite 201, Princeton, NJ 08542. A total of five issues will be published between October 2012 and June 2013. A publication schedule can be found at www.princeton.edu/bulletin or by calling 609-258-3601. Permission is given to adapt, reprint or excerpt material from the Bulletin for use in other media. Application to mail the Bulletin (USPS-445-080) at Periodicals postage prices is pending at New York, N.Y., and additional mailing offices.

Postmaster: Send address changes to Princeton University Bulletin, Office of Communications, Princeton University, 22 Chambers St., Suite 201, Princeton, NJ 08542.

Subscriptions

The Bulletin is distributed free to faculty, staff and students. University employees can manage their delivery options at www.princeton.edu/main/link/options. Others may subscribe to the Bulletin for \$5 for the 2012-13 academic year. Send a check to Office of Communications, Princeton University, 22 Chambers St., Suite 201, Princeton, NJ 08542. Questions can be directed to 609-258-3601 or bulletin@princeton.edu.

♻️ The Princeton University Bulletin is printed on paper made with 30 percent post-consumer waste fiber.

Nondiscrimination statement

In compliance with Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, Title VI of the Civil Rights Act of 1964, and other federal, state and local laws, Princeton University does not discriminate on the basis of age, race, color, sex, sexual orientation, gender identity, religion, national or ethnic origin, disability, or veteran status in any phase of its employment process, in any phase of its admission or financial aid programs, or other aspects of its educational programs or activities. The vice provost for institutional equity and diversity is the individual designated by the University to coordinate its efforts to comply with Title IX, Section 504 and other equal opportunity and affirmative action regulations and laws. Questions or concerns regarding Title IX, Section 504 or other aspects of Princeton's equal opportunity or affirmative action programs should be directed to the Office of the Vice Provost for Institutional Equity and Diversity, Princeton University, 205 Nassau Hall, Princeton, NJ 08544 or 609-258-6110.

Submitting news

The stories published in the Princeton University Bulletin are drawn from the University's main website. To suggest news items for coverage, visit our Submit News Web page at www.princeton.edu/main/news/share/submitnews.

Submitting events

To submit event notices for the Featured Events calendar on the main University website, visit www.princeton.edu/main/news/share/submitevents.

Cecilia Rouse named Woodrow Wilson School dean

MICHAEL HOTCHKISS

Cecilia Rouse, a Princeton faculty member for two decades who is the Lawrence and Shirley Katzman and Lewis and Anna Ernst Professor in the Economics of Education, has been selected as dean of the University's Woodrow Wilson School of Public and International Affairs, effective Sept. 1.

Rouse, a well-known scholar of the economics of education, is the founding director of the Princeton Education Research Section and a member of the National Academy of Education. She is a senior editor of *The Future of Children*, a policy journal published by the Wilson School and the Brookings Institution, and serves on the editorial board of the *American Economic Journal: Economic Policy*.

From 2009 to 2011, Rouse served as a member of President Barack Obama's Council of Economic Advisers, a

three-member panel that provides the president with analysis and advice on a wide range of domestic and international economic policy issues.

"It is a great pleasure to announce the appointment of Cecilia Rouse as the dean of the Woodrow Wilson School," said Princeton President Shirley M. Tilghman. "Her scholarly distinction in the fields of labor economics and education policy, coupled with her extensive experience in Washington, epitomize the best of the school's tradition of applying rigorous social science research to inform public policy. She is also highly regarded as a dedicated teacher and mentor to her students. I look forward to working with her as she builds upon the great strengths of the school."



Rouse

Rouse said she was honored to be selected as the school's next dean.

"I am delighted to be offered this opportunity to serve as dean of the Woodrow Wilson School, where I have very happily taught and conducted research for the past 20 years, and to build on the exceptional leadership of my predecessors," Rouse said. "My goal will be to elevate even further the school's stature and impact in the policy arena — it should be the go-to place for anyone interested in dynamic, insightful, timely domestic and international policy analysis and dialog, and where a diverse set of undergraduate and graduate students are trained to become the policy leaders of the future."

Rouse's primary research interests are in labor economics with a focus on the economics of education. Rouse joined the Princeton faculty in 1992 after earning her Ph.D. in economics from Harvard University. That same year, she joined the Industrial Relations Sec-

tion, and later served as director of the section, from 2006 to 2009. In 2001, she started the Education Research Section, an interdisciplinary unit within the Industrial Relations Section and the Wilson School that promotes the use of research in education decision-making.

She worked for a year in the White House at the National Economic Council from 1998 to 1999.

While most of Rouse's scholarly work has focused on domestic policy issues, she has researched poverty in Sri Lanka and unions in South Africa. She spent the year following receipt of her undergraduate degree from Harvard studying at L'Université de Cheikh Anta Diop in Senegal.

Rouse will succeed Christina Paxson, who resigned in June after three years as dean of the Wilson School to become president of Brown University. Anne Case, the Alexander Stewart 1886 Professor of Economics and Public Affairs, served as interim dean. ♥

Board approves seven faculty appointments

The Princeton University Board of Trustees has approved the appointments of seven faculty members, including two full professors and five assistant professors. The trustees also revised the appointment of Assistant Professor of Near Eastern Studies Liora Halperin to be effective July 1, 2012, rather than Sept. 1.

Professor

Amitava Bhattacharjee, in astrophysical sciences, joined the faculty effective Aug. 27, 2012, from the University of New Hampshire, where he has been a faculty member since 2003. He previously served as a research fellow at the University of Texas-Austin and taught at Columbia University and the University of Iowa.

Bhattacharjee's research focuses on theoretical plasma physics, and his research interests and publications cover magnetic reconnection, turbulence and singularity formation, kinetic theory, free-electron lasers and complex plasmas. He holds a bachelor's degree from the Indian Institute of Technology,

master's degrees from the University of Michigan, and a Ph.D. from Princeton.

Mihalis Dafermos, in mathematics, will join the faculty on Jan. 1, 2013, from the University of Cambridge, where he has taught since 2004. Previously, he was an instructor at the Massachusetts Institute of Technology.

Dafermos specializes in partial general relativity and mathematical physics. His publications include numerous papers on the formation and stability of black holes. Dafermos received his B.A. from Harvard University and his Ph.D. from Princeton.

Assistant professor

The following appointments are for three-year terms:

Emmanuel Abbe, in electrical engineering and applied and computational mathematics, began his term Sept. 1, 2012. Abbe specializes in information theory, and he previously was a postdoctoral fellow at Ecole polytechnique federale de Lausanne, where he received his bachelor's and master's degrees. He holds a Ph.D. from MIT.

Simone Giombi, in physics, joined the faculty on Sept. 1, 2012. Formerly a postdoctoral fellow at Perimeter Institute for Theoretical Physics in Ontario, Giombi's research focuses on high energy theory. He received his B.S. from the University of Bologna and his Ph.D. from Stony Brook University. He previously was a postdoctoral fellow at Harvard.

Michael Mueller, in mechanical and aerospace engineering, began his term on Sept. 1, 2012. A specialist in thermal sciences, Mueller received his B.S. from the University of Texas-Austin and his Ph.D. from Stanford University.

Arvind Narayanan, in computer science, joined the faculty on Sept. 1, 2012.

Narayanan's fields of specialization are systems and security, and his previous position was as a postdoctoral fellow at Stanford. He earned bachelor's and master's degrees at the Indian Institute of Technology, Madras, and his Ph.D. at the University of Texas-Austin.

Bridgett vonHoldt, in ecology and evolutionary biology, will begin her term on July 1, 2013. A specialist in evolutionary biology, vonHoldt is a postdoctoral fellow at the University of California-Los Angeles, where she earned her Ph.D. She received her bachelor's degree from Eckerd College and her master's degree from New York University. ♥

Faculty submit resignations

The following faculty members have submitted their resignations:

- **Arthur Calderbank**, professor of electrical engineering, mathematics and applied and computational engineering, to accept a position at Duke University, effective Sept. 1, 2011.

- **Kathryn Gin**, assistant professor in religion, to accept a position at Stanford University, effective July 1, 2012.

- **Gustav Holzegel**, assistant professor of mathematics, to accept a position

at Imperial College London, effective Sept. 1, 2012.

- **Patrick Kehoe**, the Walker Professor of Economics and International Finance, to accept a position at the University of Minnesota, effective July 1, 2012.

- **Rahul Pandharipande**, professor of mathematics, to accept a position at the Swiss Federal Institute of Technology, effective Sept. 1, 2012. ♥

Faculty promotions approved

The Board of Trustees has approved the promotions of three faculty members, all effective July 1, 2012. The faculty members and their departments, by the academic

rank to which they are being promoted, are:

Professor — **Adam Elga**, philosophy; **Thomas Kelly**, philosophy; and **Dmitri Tymoczko**, music. ♥

More news on the Web

Visit the News at Princeton Web page at www.princeton.edu/main/news for recent stories, such as:

- Microorganisms that crashed to Earth embedded in the fragments of distant planets might have been the sprouts of life on this one, according to new research from Princeton University, the University of Arizona and the Centro de Astrobiología in Spain.
- A groundbreaking survey of Pakistanis has found stronger support for militant groups among the middle class than the poor. The finding by a team including Princeton researchers challenges the conventional wisdom about links between economic status and views on militants that has helped shaped American foreign-aid policies since 2001.
- The Cooperative Institute for Climate Science at Princeton University recently received more than \$3 million in new federal funding intended to support climate science and education.
- David Blei and Michael Freedman, two Princeton University computer scientists, have received the 2012 Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the U.S. government on science and engineering professionals in the early stages of their research careers.
- International leaders in the fields of philosophy and history, public health, neuroscience and biophysics, and Eastern European history and politics will visit Princeton for terms starting in the academic years 2012-13 and 2013-14 in the University's Global Scholars Program.
- Princeton University researchers Sanjeev Arora, Manjul Bhargava, Amit Singer and Frans Pretorius netted four of the 21 inaugural Simons Investigators awards recently presented to outstanding scientists nationwide in mathematics, physics and computer science. Princeton received the most awards of any institution.
- University officials have submitted plans to the Princeton Borough Zoning Board of Adjustment for proposed renovations to 20 Washington Road. The academic building is slated to become the home of the Department of Economics, several international offices and the Princeton Institute for International and Regional Studies.

Community ties

This issue of the Princeton University Bulletin is being mailed to residents of the local community on behalf of the Office of Community and Regional Affairs.

Led by Kristin Appelget, director of community and regional affairs, and Karen Woodbridge, director of community relations, the office serves as a bridge between the University and the community. Staff members work

with county and municipal government officials, and with a wide variety of community organizations, to enhance the quality of life throughout the Princeton region.

The office manages University/community relationships in areas involving financial contributions, land use, affordable housing, transportation, environmental impact and local economic development.

Staff members also oversee a wide array of community relations initiatives, such as the Community Auditing Program and the Program in Continuing Education, the Surplus Equipment Donations Program, and the community use of University facilities. The office also assists in the coordination of the program in which Princeton University employees serve as volunteer firefighters with the Princeton Fire Department.

In addition, the office participates in the organization of numerous arts and entertainment initiatives for the campus and the community, such as Community and Staff Day at Princeton Stadium and the Community spring festival.

For more information about the Office of Community and Regional Affairs, call 609-258-3204, visit 22 Chambers St., Suite 101, or go online at www.princeton.edu/community. ♥



Residents invited to Community and Staff Day

Local residents are invited to Community and Staff Day, the annual celebration of sports and entertainment, beginning at 10 a.m. Saturday, Nov. 3, in Jadwin Gymnasium.

The event will feature activities for all ages and interests, including a “Family Fun-Fest,” final judging of the Sustainability Superhero Trash Art contest at 11 a.m., a youth sports

clinic for children ages 5 to 13 hosted by Princeton University athletes from 11:30 a.m. to 12:30 p.m., and the Princeton vs. Penn football game, which begins at 1 p.m.

Admission to the “Family Fun-Fest” and the youth sports clinic is free. Participants in the youth sports clinic will receive a complimentary ticket to the football game. Parents and guardians

will be able to purchase \$5 game tickets at the clinic entrance.

For more information, call 609-258-5144; for advance ticket purchases, call 609-258-4849. Additional information is available on the Princeton Athletics website at www.goprincetontigers.com and the Office of Community and Regional Affairs website at www.princeton.edu/community. ♥

One of the activities at this year's Community and Staff Day, to be held Saturday, Nov. 3, is final judging of the Sustainability Superhero Trash Art contest.

By the numbers

Dozens of Princeton University students, faculty, staff and alumni supply thousands of hours of volunteer support to the Princeton Fire Department and Princeton First Aid and Rescue Squad each year.

Princeton Fire Department Associate Member Program:

- Number of University employees who volunteer in the associate member program: 30
- Number of hours the associate members have trained in the past 12 months: 648
- Number of calls that the associate members have responded to in the past 12 months: 250
- Number of volunteer hours by associate members in the past 12 months: 1,146
- Number of associate members who also volunteer in their hometowns: 22

Princeton First Aid and Rescue Squad (PFARS):

- Of the 102 riding members of PFARS, half have University ties; 34 are current students and 17 are alumni or University employees.
- Of the 13 members on PFARS's executive committee, six are Princeton students and three are University alumni or staff.
- Of PFARS's top 10 ambulance call responders in 2012, six are Princeton University students.
- Of the 12 squad members who have responded to the more than 100 ambulance calls in 2012, eight are students at the University. As of Sept. 1, those eight students had gone on a combined 1,132 calls.

Source: Facilities Organization and Princeton First Aid and Rescue Squad



More than 80 student-athletes visited the YMCA of Trenton for the Princeton Varsity Club's annual service event, Weapons of Mass Construction, and helped refurbish the nonprofit's indoor and outdoor facilities. To watch a video about the event, visit www.princeton.edu/main/news/multimedia.

Video still courtesy of Princeton Varsity Club



Photo by Denise Applewhite

“Circle of Animals/Zodiac Heads,” a series of 12 monumental sculptures by the renowned Chinese artist and social activist Ai Weiwei, has been installed on Scudder Plaza in front of Robertson Hall. The bronze sculptures are about 10 feet high, and they will be on display until Aug. 1, 2013. To learn more about the exhibition and the artist, visit www.princeton.edu/aiww.

Construction

Continued from page 1

Andlinger Center for Energy and the Environment: This summer marked the completion of excavation of the site, a process that involved grinding — rather than blasting — bedrock in order to reduce disruptions for occupants in nearby buildings. The three-story facility, which will be home to the Andlinger Center for Energy and the Environment, will extend one story below grade and include specialized engineering laboratories, offices, support spaces and a lecture hall. Concrete operations to lay the foundation are underway, and erection of the building's steel frame is expected to start this winter. The 129,000-square-foot structure, to be located at the corner of Olden and Prospect streets, has been designed by Tod Williams Billie Tsien Architects of New York.

Washington Road stream: The restoration of the Washington Road stream, which flows into Lake Carnegie near Faculty Road, was completed this summer. The project aims to reduce erosion and other damage to ecosystems in the area, as well as improve the water quality of the stream and lake. The reconfiguration was engineered by Vanasse Hangen Brustlin of Watertown, Mass., and involved: widening the stream; reducing its existing slope through the use of step pools; reconfiguring the flood plain; and placing

approximately 300 new trees and 2,000 plantings around the Washington Road valley. The University will spend the next five years monitoring the success of improvements to the landscape and waterways.

Firestone Library: A reconfigured lobby greeted students and faculty returning to the University as part of the second phase of the comprehensive, 10-year renovation of Firestone Library. Many of the changes, such as the temporarily relocated security desk and temporarily relocated circulation and reserve service counter, are interim steps toward creating a more open lobby and adding reader spaces on the first floor. The building's main staircase will remain closed until January 2013 for permanent improvements to the stairs, including a new skylight installation. Work also will continue in a large area of the A floor to upgrade mechanical systems, and improve much of the collection and study spaces. The library will remain open and occupied throughout the long-term project designed by Shepley Bulfinch architects of Boston with Frederick Fisher Partners of Los Angeles.

Bedford Field: Bedford Field recently opened as the new home of the Princeton field hockey team, following work this summer to convert the ground from grass to artificial turf. Drainage improvements also were completed as part of the project's first phase. The final phase will begin in spring 2013 and will include a grandstand, field

lighting, press box modifications and a new building, designed by Marble Fairbanks of New York, with team rooms and bathrooms. The press box and outbuilding will be shared with the men's and women's lacrosse teams, which use the adjacent Class of 1952 Stadium.

Jadwin Hall: The four-year phased renovation of Jadwin Hall, which houses the Department of Physics, continues this academic year with work focused on the 2nd floor and B level. By the time the project is completed in fall 2013, the entire building will be outfitted with new energy-efficient heating, ventilation and air-conditioning systems, energy-efficient lighting and building controls, new windows, and upgraded sprinkler and fire alarm systems. Offices, laboratories, classrooms and lobby spaces also have been refreshed and updated as part of the project.

Hoyt Laboratory: The ongoing renewal of Hoyt Lab will provide new mechanical, electrical and laboratory systems throughout the 34,000-square foot structure, which is intended to extend the building's life and make it more efficient. Interior renovations will continue this fall to create specialized laboratory and administrative spaces to accommodate biological engineering research affiliated with the School of Engineering and Applied Science. Hoyt Lab has been offline since the chemistry department moved to the new Frick Chemistry Laboratory in fall 2010.

West College waterproofing: Waterproofing the West College basement was one of many University maintenance projects completed this summer, though working without damaging the historic structure's ivy presented a unique challenge. The project required digging a hole around the administrative building, near the ivy's base, to seal the exterior below grade. Grounds and Building Maintenance staff preserved the plantings by digging up the roots, wrapping them in burlap and placing them in wooden boxes anchored to the building. As the waterproofing was finished in sections, the ivy was replanted.

Lakeside: The former Hibben and Magie apartments will be demolished this fall to make way for the new Lakeside graduate student community, which will house up to 715 residents in 329 units. Preparations for construction of a parking garage and the facility's geothermal heating and cooling system will happen at the same time. The project, which is expected to finish in summer 2014, will expand housing capacity at the site located south of Faculty Road and east of Alexander Street along Lake Carnegie. The project team includes the architectural firm Studio Ma of Phoenix and Princeton, and developer American Campus Communities of Austin, Texas.

Merwick and Stanworth faculty and staff housing: The University has received final site plan approval from the Princeton Regional Planning Board for the proposed community of townhomes and

apartments along Route 206/Bayard Lane. Phase one of the project is expected to be completed in summer 2014 with the construction of 128 units at the Merwick site. The second stage of work at Stanworth is scheduled to follow with the redevelopment of 198 units and is expected to be completed in summer 2016. Design architect Torti Gallas and Partners of Maryland is developing the project on behalf of the University.

Olden House: Olden House, developed by local architect and developer J. Robert Hillier of Princeton, will provide 18 apartments for visiting faculty members. Following demolition this summer of two unoccupied townhomes owned by the University, construction is expected to begin this month on the 11,779-square-foot building at the corner of Olden and Williams streets. It is scheduled to open in summer 2013. ♥



Workers from Play Safe Turf & Track of Ithaca, N.Y., installed artificial turf at Bedford Field this summer. The process involved sewing the turf to the ground in the sections.

Photos by Mahlon Lovett

People

Stuart Leland has been named Princeton University's first director for research integrity and assurance, to which he brings 20 years of experience in laboratory research and in research compliance. His appointment was effective Aug. 15.

Reporting to Dean for Research A.J. Stewart Smith, Leland oversees the campus committees that help Princeton researchers ensure that



Leland human, animal and biological research is in line with various regulations, laws, policies and guidelines. In addition, Leland will make sure that researchers are aware of and properly address any financial conflicts-of-interest in their work. He hopes to create an electronic

management system to make Princeton's compliance processes both more efficient for researchers, and more effective at making sure that proposals have been thoroughly considered.

Leland came to Princeton from the pharmaceutical company Merck and Co., where he was director of North American animal welfare compliance. He previously held positions as clinician researcher and veterinarian with drug companies Pfizer Inc., Wyeth Research and Aventis Pharmaceuticals. He also has worked on the laboratory side at the University of Pennsylvania's Institute for Human Gene Therapy and University Laboratory Animal Resources, and the University of Washington's regional primate research center.

Leland is a board-certified laboratory-animal veterinarian and completed his postdoctoral fellowship

at Yale University. He received his doctor of veterinary medicine degree from the University of California-Davis in 1988 and his bachelor's degree in animal science from Cornell University in 1983.

Stefanie Karp, who has an extensive law enforcement background as a lawyer, investigator and university official, has been appointed director of operations for the Princeton University Department of Public Safety.



Karp

Karp, director of operations and external affairs for the University of Pennsylvania Division of Public Safety the past four years, began her Princeton duties Sept. 24. She is responsible for the department's day-to-day operations

and is second in command to Executive Director of Public Safety Paul Ominsky.

Karp earned a bachelor of arts in political science from Pennsylvania State University in 1990 and a juris doctor degree from Temple University School of Law in 1993.

In various levels of government in Pennsylvania, she has served as a legal clerk, deputy attorney general, narcotics agent and assistant district attorney. She has also worked at LexisNexis, PricewaterhouseCoopers and AON Risk Services Inc.

At the University of Pennsylvania, she was responsible for internal and external communication strategies and managing initiatives and strategies for the university police department, technology and emergency communications, fire and emergency services and other areas.

Aspire campaign raises record \$1.88 billion for Princeton

The five-year Aspire campaign, which ended on June 30, exceeded its \$1.75 billion goal by raising \$1.88 billion — substantially more than any campaign in Princeton's history — to support the University's programs of teaching and research as well as its efforts to prepare students from a wide range of backgrounds for leadership in a complex world.

"The success of this collective effort to strengthen the University to better serve the nation and the world is a tribute to the dedication, enthusiasm and generosity of our alumni, parents and friends," said Princeton President Shirley M. Tilghman. "In countless ways, the Aspire campaign has reinforced our traditional strengths while allowing us to break new ground and prepare to achieve our highest aspirations for the years ahead."

The campaign focused on a carefully determined set of priorities: strengthening the core Princeton experience; providing unrestricted funds through the Annual Giving program for efforts such as the University's groundbreaking financial aid program; and enhancing the University's capacities in engineering and the environment, the creative and performing arts, neuroscience, and global citizenship.

More than 65,000 donors (undergraduate and graduate alumni, corporations and foundations, parents, and friends) — including more than 77 percent of all undergraduate alumni — contributed 271,559 separate gifts to Aspire since it was launched in November 2007. Among other purposes, these gifts established 26 new professorships, 120 new undergraduate scholarships and 25 new graduate fellowships.

In the final year of the campaign Annual Giving set a new record by raising \$57.2 million, with an undergraduate alumni participation rate of 60.8 percent. Over the course of the campaign Annual Giving twice set new dollar records, with alumni, parents and friends contributing a total of more than \$254.5 million in Annual Giving funds — unrestricted support that is essential to the University's financial stability and flexibility.

In keeping with Princeton tradition, the campaign was conducted largely through the efforts of volunteers. The work of alumni from more than 85 undergraduate classes, graduate alumni and parent volunteers across the country and around the world was guided by Aspire campaign co-chairs Robert Murley of the Class of 1972 and Nancy Peretsman of the Class of 1976. During the first two years of the campaign, the Annual Giving effort was led by Rajiv Vinnakota of the Class of 1993; for the

final three years, he was succeeded by Kelly Doherty of the Class of 1981.

Significant funds were raised in all of the University's areas of priority. The most notable achievements include:

In the creative and performing arts, a \$101 million gift from Peter B. Lewis, a 1955 alumnus and University trustee, established the Lewis Center for the Arts, which has allowed Princeton to expand its offerings in visual arts, music, dance, theater and creative writing. Additional funds were raised for a new program to bring visiting artists to campus and to create new faculty positions. Also, the directorship of the Princeton University Art Museum was endowed, and new curatorships were established.

In engineering and a sustainable society, a \$100 million gift from Gerhard R. (Gerry) Andlinger, a 1952 alumnus, established the Andlinger Center for Energy and the Environment, which focuses on sustainable energy development, conservation and environmental protection, in the School of Engineering and Applied Science. The campaign also led to the creation of a center for innovation in engineering education, which encourages students to connect academic theory to practical needs in order to develop solutions to a variety of problems around the world.

The Grand Challenges Initiative, a collaboration among the School of Engineering and Applied Science, the Woodrow Wilson School of Public and International Affairs, and the Princeton Environmental Institute, generated funding to allow faculty and students to work together to develop sustainable energy, combat emerging infectious diseases, and overcome natural resource limitations in developing countries. And a new building — Sherrerd Hall — now serves as the home of the Department of Operations Research and Financial Engineering and the Center for Information Technology Policy.

Two major funds have been created to support groundbreaking research: a transformative technology fund, for the development of new technologies that have the potential to enable significant scientific advances; and an innovation fund for engineers who wish to pursue projects that may be outside their formal area of expertise or are too speculative to attract conventional funding.

In neuroscience, gifts to the campaign established three major centers of research within the Princeton Neuroscience Institute to better understand the physiology behind human behavior and to discover information that may aid in the battle against neurological disorders: a center for systems neuroscience; a center for the neuroscience of mind and behavior; and a center for neural

circuit dynamics. Several multimillion dollar gifts also are funding a new complex, currently under construction, to house the institute and the Department of Psychology.

In global citizenship, gifts are backing initiatives that help give students a more international and multicultural perspective and that enable the exchange of ideas across national borders; and centers that promote a better understanding of subjects that affect the creation of effective public policies. One such initiative is the Bridge Year Program, which allows small groups of incoming freshmen to defer their enrollment for a year to engage in public service while immersed in another culture.

A global fellows program, which brings promising early-career faculty members from around the world to campus, is being established, and a center for globalization and governance, which brings together students and faculty from economics, history, sociology and political science to explore the academic and policy dimensions of globalization and international governance, was endowed.

Two newly supported centers will focus on economic literacy, with the goal of giving leaders the knowledge they need to create sound public policies. A center for public policy and finance within the Woodrow Wilson School of Public and International Affairs is a hub for study across various disciplines that intersect with public policy and finance — including eco-

nomics, operations research, political science, history and ethics. A center for economic policy studies brings together experts in academia, government and industry for frank discussions about crucial financial issues.

The campaign also is providing support for various aspects of teaching, residential life and athletics — elements that make up a large part of the core Princeton experience for students. Generous support for the financial aid program allowed the University to meet the increased need for aid during the recent economic downturn, and Princeton's hallmark freshman seminars gained additional funding. Students also will have more opportunities for community service, thanks to the campaign.

Butler College, first constructed in 1964, was rebuilt as a state-of-the-art dormitory complex composed of five new residence halls funded by gifts. Princeton's athletics program benefited from support for renovated and new facilities, including venues for football, soccer, lacrosse and tennis. Alumni also endowed the directorship of athletics and a range of other opportunities for varsity and recreational student-athletes. The campus was made safer for pedestrians by a new bridge spanning Washington Road.

A final report on the Aspire campaign, including an honor roll of donors and volunteers, will be posted online in the fall. Aspire was the fourth and largest formal fundraising campaign in Princeton's 266-year history. ♥

More Aspire news on the Web

- Princeton's 2011-12 Annual Giving campaign raised \$57.2 million — the highest total in Annual Giving history — with 60.8 percent of undergraduate alumni participating.
- A \$5 million gift from Nancy A. Nasher and David J. Haemisegger of Dallas, both members of Princeton University's Class of 1976, will endow the directorship of the Princeton University Art Museum.
- A \$4.5 million gift from Allen R. Adler, a member of Princeton's Class of 1967, and his wife, Frances Beatty Adler, will endow a curatorship, lectureship, and a programs and exhibition fund at the Princeton University Art Museum.
- Michael Novogratz, a member of Princeton's Class of 1987, and his wife, Sukey Caceres Novogratz of the Class of 1989, have given \$4 million to establish a fund to support the University's Bridge Year Program, which enables newly admitted freshmen to defer enrollment and spend nine months serving a local community in another country.
- The Andrew W. Mellon Foundation has awarded Princeton a \$3.3 million challenge grant to support the University's creation of the Fellows in the Creative and Performing Arts program, which will bring innovative early- to mid-career artists to campus.

➔ **ONLINE:** More information
giving.princeton.edu/news

Employee retirements

Effective June 1, 2012: in Building Services, lead janitor **Thomas Carmody**, after 12 years.

Effective July 1, 2012: in the Office of Information Technology (OIT) Support Services, administrative specialist **Manjit Bhalla**, after 21 years; in athletics, assistant manager for business operations **Phyllis Chase**, after 27 years; in the library, biographic specialist **Alice Dickey**, after 39 years; in chemistry, graduate administrator **Sallie Dunner**, after 12 years; in athletics, senior associate director **Ingeborg Radice**, after 29 years; in the library, librarian **Neuza Smukler**, after 21 years; in athletics, department office support staff member **Carol Weston**, after 26 years; in OIT Support Services, administrative specialist **Velvet White**, after 10 years.

Effective Aug. 1, 2012: in development capital giving, senior adviser for

creative strategy **Judith Friedman**, after 17 years, and administrative assistant **Patricia Lento**, after 14 years; in Human Resources, Human Resources Information Systems manager **Lauri McVicker**, after 34 years; in the Alumni Council, assistant to the director **Lydia Osborne**, after 38 years; in the Office of the Vice President for Finance and Treasury, senior adviser to the vice president **Donald Weston**, after 38 years; in Princeton Plasma Physics Laboratory Communications, manager of media relations **Patti Wieser**, after 17 years.

Effective Sept. 9, 2012: in the Office of the President, house manager and chef **Sally Lewis-Lamonica**, after 23 years; and in the Office of the Dean of Undergraduate Students, manager of administration **Carol McQuaid**, after 13 years.

Employee obituaries

Current employees

May: **Arla Ditrack**, 64 (1992-2012, development leadership gifts).

June: **Amy Butterworth**, 56 (2008-2012, Human Resources).

July: **Michael Murray**, 52 (1987-2012, Dining Services).

August: **Margaret Reilly**, 61, (1986-2012, Council of the Humanities).

Retired employees

November: **Dolores Hoelle**, 76 (1975-1995, library).

February: **Rosalie Green**, 94 (1946-1981, art and archaeology).

May: **Paula Carlton**, 76 (1978-1992,

Housing and Real Estate Services); **Ernest Goehrig**, 84 (1980-1993, Dining Services); **William Johnson**, 76 (1984-1996, Princeton Plasma Physics Laboratory); **Shirley Robbins**, 90 (1967-1987, information technology).

June: **James Greenhough**, 76 (1975-2001, Princeton Plasma Physics Laboratory); **Ruth Mozgo**, 93 (1951-1982, machine shop); **Henry Ragoonanan**, 75 (1976-1999, Building Services).

July: **Arthur Allen**, 80 (1982-1999, Utility Plant); **Wilbur Gunnell**, 93 (1967-1991, Building Services).

August: **Angela Knorr**, 66 (1981-2001, Environmental Health and Safety).

Benefits plan changes coming for open enrollment

The University's annual benefits open enrollment period will run from Monday, Oct. 15, through Friday, Nov. 16, during which time faculty and staff can make changes to their benefits plans that will become effective Jan. 1, 2013. Several important changes to benefits will be expained in greater detail in the mailing to employees' homes on or about Oct. 12. After Nov. 16, employees will be able to change their elections in 2013 only if they experience a qualifying status event. The Human Resources Benefits Team is available throughout open enrollment to answer questions.

Medical plan changes

To simplify choices, the preferred provider organization (PPO) and point-of-service (POS) plans will be consolidated into the new Princeton Health Plan (PHP), offered through both Aetna and UnitedHealthcare (UHC). This change is expected to improve the overall level of medical benefits and save money for employees and the University. Employees who are currently enrolled in the PPO or POS plan and do not elect a new plan during open enrollment will be automatically enrolled in the PHP with their current network provider, i.e., Aetna or UHC.

Both the PHP and Aetna HMO plan will offer 100 percent coverage for in-network preventive services.

A 20-minute presentation about the medical plan changes and how employees can help manage related costs is available online at www.princeton.edu/hr/oe.

On-campus lab services now available

Aetna and UnitedHealthcare members in the Princeton health plans may now have their lab work done on campus at McCosh Health Center at no charge. Interested individuals should call University Health Services to book an appointment or check hours for a walk-in visit.

Urgent care services

Aetna and UnitedHealthcare members in the Princeton health plans may go to St. Peter's Urgent Care Center, in-network, for non-life-threatening medical needs. Examples include care for a possible sprain or broken bone or the need for stitches. The center is located on Route 206, about 10 minutes north of campus on the southbound side across from the Montgomery Center.

Expense account changes

The annual maximum contribution amount that faculty and staff can elect for the Health Benefit Expense Account (HBEA) for 2013 is decreasing from \$5,000 to \$2,500 as required by health care reform. The contribution amount for the Dependent Care Expense Account (DCEA) is not changing.

Benefits fairs

Benefits Fairs will be held from 10 a.m. to 2 p.m. on Wednesday, Oct. 24, in the Lyman Spitzer Building at the Princeton Plasma Physics Laboratory, and from 10 a.m. to 2 p.m. on Thursday, Oct. 25, in the Frist Campus Center Multipurpose Rooms. Representatives from the various health, welfare and retirement vendors will be available. Reservations are not required.

Questions?

Those with questions regarding the University health care plans may contact the Human Resources Benefits Team at 609-258-3302 or benefits@princeton.edu. To receive important information about benefits, including reminders and deadlines during open enrollment and throughout the year, follow us on Twitter at twitter.com/PUBenefits.

Retiree open enrollment period ends Nov. 9

The University's 2013 retiree annual benefits open enrollment period began on Monday, Oct. 1, and ends on Friday, Nov. 9, with changes effective Jan. 1, 2013. Due to changes in the benefits being offered to both pre- and post-65 retirees, we are extending the retiree open enrollment period from two to six weeks to allow for more time to review the plan changes and make decisions on coverage.

During this time, retirees may change or waive their health plan coverage as well as remove dependents from their retiree medical plan. Re-enrollment at a later date is not permitted.

Retirees should have received the open enrollment information in the mail last week. Information is also available on the Web at www.princeton.edu/hr/oe.

For pre-65 retirees, the preferred provider organization (PPO) and point of service (POS) health plans have been consolidated into a new plan called the Princeton Health Plan (PHP). The new PHP will be offered through both Aetna and UnitedHealthcare. Retirees who are currently enrolled in the PPO or POS plan and do not make an election will be automatically enrolled with their current network provider. The PHP and Aetna HMO plans will provide 100 percent coverage for preventive services in 2013.

For post-65 retirees, medical-eligible dependents and long-term disability participants, Princeton will automatically enroll these individuals onto a Medicare Part D Employer Group

Waiver Plan (EGWP). The Princeton prescription drug plan that participants are currently enrolled under will provide secondary coverage to the Medicare Part D plan. Therefore, the coverage for participants will remain the same. Retirees will have the option to opt out of the prescription drug plan; however, those who do will no longer have a prescription drug plan through the University.

All pre-65 retirees and retirees enrolled under the Premium, Standard or Princeton Medicare Plan have the option of electing to enroll in a vision plan.

Anyone with questions may contact the Human Resources Benefits Team at 609-258-3302 or benefits@princeton.edu.

Faculty obituaries

Leland Allen, a Princeton professor emeritus remembered for his influence on the field of theoretical chemistry and for his love of discussing his



Allen

wide-ranging professional and personal interests with colleagues and students, died of Alzheimer's disease at the Acorn Glen assisted-living residence in Princeton July 15. He was 85.

By his retirement from the University in 2001, Allen, who rose to the rank of professor five years after coming to Princeton in 1960, had become a preeminent and prolific theoretical and quantum chemist. His more than 400 scientific publications included his mathematical explanation of electronegativity, which relates to the ability of atoms and molecules to attract electrons. His work provided a uniform method for estimating the electronegativity for chemical elements using universally available and generally intelligible data.

Allen's aptitude in theoretical chemistry has been attributed to his background in engineering and physics, from which he drew an understanding of mechanics, electricity and magnetism, and the various mathematical methods needed to explain what chemists observed. Allen received his bachelor's degree in electrical engineering from the University of Cincinnati in 1949 and completed his Ph.D. in theoretical physics at the Massachusetts Institute of Technology in 1956.

Richard Burgi, Princeton University professor emeritus of Slavic languages and literatures, died of natural causes July 26 in Athens. Remembered for his

deep understanding of Russian poetry as well as Hellenic studies, he also was known as a mentor to many students. He was 90.

Burgi joined the Princeton faculty in 1962 as a full professor and served as chair of Slavic studies for seven years, hiring faculty who shaped and strengthened the department for decades. In 1992, he transferred to emeritus status. From 1954-55 he was a Hodder Fellow in the University's Council of the Humanities. Before coming to Princeton, Burgi taught at Yale University for 13 years.



Burgi

At Princeton, Burgi taught Russian at all levels and specialized in early 19th-century Russian literature, in particular teaching courses on Alexander Pushkin and Nikolai Gogol. He wrote a book

on the history of the Russian hexameter and served on the College Board committees for Russian achievement tests and Graduate Record Examinations.

Burgi also played an important role in establishing the field of modern Greek studies at the University, teaching modern Greek language and literature from the early 1970s until his retirement. Reflecting his love of both theater and Greece, Burgi donated his collection of modern Greek playbills to the Rare Books Collection of the Princeton library in 1988.

Howard "Pat" Curtiss Jr., an authority on the aerodynamics of helicopters who helped design generations of vertical-takeoff aircraft for many companies, died Sept. 20 at the University Medical Center of Princeton at Plainsboro. He was 82 and the cause was bladder cancer.

Curtiss, a professor of mechanical and aerospace engineering at Princeton for 33 years, found the essential qualities of complex aerodynamic problems and developed relatively simple mathematical models that allowed engineers to overcome those problems and create innovative designs. His students have gone on to leadership roles throughout the aerospace industry.



Curtiss

In the late 1970s and early 1980s, Curtiss and his students shed light on the complicated "ground effect" aerodynamics that occur when the rushing wake of spinning helicopter blades bounces off the ground and recirculates through the rotor. Their work is a standard reference for people studying this phenomenon today.

At Princeton, Curtiss ran a unique test facility on the Forrestal Campus — a 750-foot-long building known as "the Long Track" that functioned as a reverse wind tunnel where scale models of aircraft were moved through the air instead of the air being moved past the aircraft.

In one of his key breakthroughs, Curtiss showed that a common theory about how to dampen undesirable flapping or flexing of rotors could actually exacerbate the problem through a phenomenon called "aeroelastic coupling."

George Miller, Princeton's James S. McDonnell Distinguished University Professor of Psychology Emeritus and a pioneer in cognitive science, died of natural causes Sunday, July 22, at his home in Plainsboro, N.J. He was 92 years old.

Miller, who joined the faculty in 1979, was an innovator in the study of language and cognition, helping to establish psycholinguistics as an independent field of research in psychology. In 1991, he was awarded the National Medal of Science, the highest scientific honor awarded by the United States, in recognition of his contributions to understanding processes of the human mind. He received an honorary doctor of science degree from Princeton in 1996.

Miller, together with Jerome Bruner and Noam Chomsky, led the "cognitive revolution" that replaced behaviorism as the leading psychological approach to understanding the mind in the 1950s.

Miller's work spanned more than five decades. An early work, his 1951 book "Language and Communication," helped establish the field of psycholinguistics, a collaboration between linguistics and psychology. In 1956, he was the author of "The Magical Number Seven, Plus or Minus Two," a paper that, in part, proposed new ideas about the way immediate memory works, suggesting that people can retain about seven "chunks" of information in what is commonly known as short-term memory. The paper became one of the most frequently quoted papers in the field. He was also the main author of "Plans and the Structure of Behavior," a 1960 book that was a catalyst for the cognitive revolution in psychology.



Miller

Gáspár Bakos: Perspective on the hunt for extrasolar planets



Name: Gáspár Bakos

Title: Assistant Professor of Astrophysical Sciences

Scholarly focus: Bakos joined the Princeton faculty in 2011 and focuses much of his research on extrasolar planets, or exoplanets — those outside of Earth's solar system — and on studying the cosmos with small telescopes. Bakos brings these two areas together under HATNet (Hungarian-made Automated Telescope Network), a planet-hunting project he designed and launched in 1999 as an undergraduate student at Eötvös Loránd University in Hungary.

This network of six, fully automated, small-scale telescopes (each with four lenses a mere 10 centimeters in diameter) scans the sky every night for extrasolar planets as they cross, or transit, in front of their parent star. Bakos also runs a related project called HAT-South that employs slightly larger telescopes in the Southern Hemisphere. Telescopes for both projects are located in Arizona, Hawaii, Australia, Namibia and Chile. The instruments' observations are stored in on-site computers that Bakos can access from Princeton's Peyton Hall.

The 41 planets (another five are being confirmed) so far discovered by HATNet include HAT-P-32b, which is twice the radius of Jupiter and one of the largest extrasolar planets observed; HAT-P-2b, which has one of the most eccentric (oval-shaped) orbits observed and swings from 4.9 million to more than 15 million miles from its sun; and HAT-P-7b, a planet orbiting in the opposite direction in which its sun rotates. HAT-South recently discovered its first planet, HATS-1b, a hot-Jupiter planet — a planet similar to Jupiter but very close to its parent star — that orbits its central star every three and a half days.

According to Bakos, these and other exoplanets provide new and important knowledge about planets as a whole, including how planets form, develop, change and eventually meet their end.

Interview conducted by Morgan Kelly

What particular focus does your work on exoplanets have?

"Anything you can do with a small telescope is of interest to me, especially if that work can be followed up with a big telescope to understand the physics of a system. One of the best examples of this dynamic are exoplanets. When my team publishes about a planet, it comes from a collaboration between small and big telescopes. Quite often, we have a small 10-centimeter HAT telescope discover a planet candidate, and then have a 10-meter telescope confirm that it is actually a planet.

"Small telescopes have a large field of view and can locate objects of interest with great efficiency. Then, large telescopes can be used for more detailed studies.

There are millions of stars in the sky and many of them have planets. Some have tiny planets and a few have big planets. But only a tiny fraction of those have a transit that can be seen from Earth. Small telescopes have a lot of advantages — first and foremost, they are ideal for a large-scale, high-precision photometric survey for discovering transiting extrasolar planets. Also, it's cheaper in terms of research dollars needed, it's simple to deploy and to operate. I go to the sites and adjust the components myself. But, most important, HATNet is fully dedicated to this research. It's observing selected areas in the sky I assign to it, nothing else. Big telescopes are divided between several projects and researchers. The HAT telescopes have been running every night for eight years with full dedication to one subject. That's a huge advantage of small telescopes."

What specific advantages does HATNet offer?

"One advantage of the HAT telescopes is that they are very well automated. I am here in Princeton and the telescopes are observing from various locations in the world. I can check on the telescope from my computer by logging in to computers at the telescope site and reading a number of weather-sensing devices, including Web cameras that show the instruments in real time. There is a computer in a nearby shed that opens the telescope at night, moves it to various positions, corrects the positions, takes the exposures. If it rains or is too bright or windy, the telescope closes. If there are clouds, it closes, but opens if the clouds go away. It's a very sophisticated robot. It is basically a well-trained observer in software."

HATNet identifies planets as they transit in front of their star — are there advantages to this technique beyond locating planets?

"When a planet passes in front of the star it causes a dip in the light curve, a variation of the brightness of the star as a function of time. From this we can infer lots of interesting things. One is to measure the size of the planet. If you see the light curve has a 1 percent dip, then you know that the surface area of the planet is 1 percent of the star, that is, the radius of the planet is 10 percent that of the star. From a transiting exoplanet system, you

can understand the radius of the planet, the radius of the star, the mass of the planet, the mass of the star, the atmosphere of the planet, the temperature of the planet, how much the orbit is tilted in respect to the stellar spin — you can tell all of this because of the nature of transits."

What important information comes from identifying extrasolar planets?

"Exoplanets have a lot of surprises. For example, the exoplanet HAT-P-7b orbits in the opposite direction of its star [known as a retrograde orbit]. We at first did not understand how this system formed, but now we have a clue that this planet did not form

To the public, exoplanet research is often framed in terms of finding Earth-like planets and life — is this focus misleading?

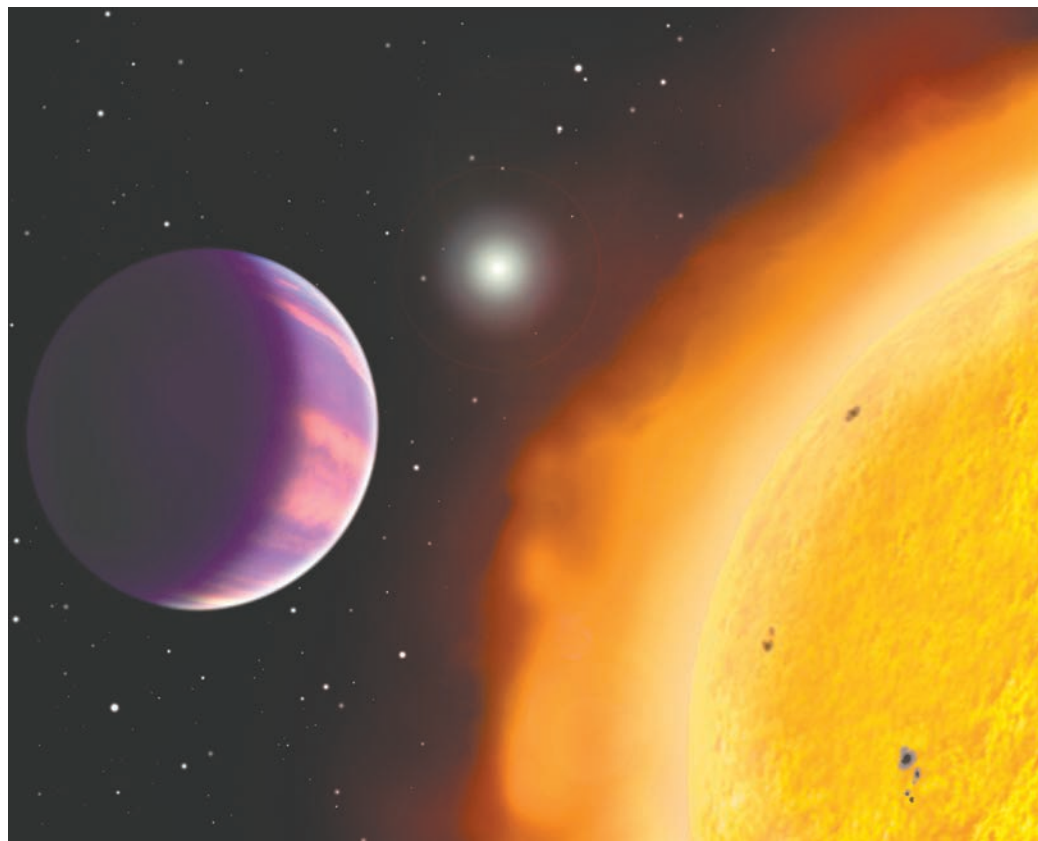
"In the media, it's all about looking for life. That is an interesting thing, of course, but we want to understand the physics of planets. All these questions also lead to a much better understanding of how frequent are habitable and inhabited planets. Life and habitability are very good questions and attract the attention of many disciplines — astronomy, biology, physics, philosophy, everything. But on occasion, I feel like the physics behind it is sometimes ignored and people are blinded by looking for a habitable planet. As an insider, I say there may be a disproportionate interest in that. It may distort the way projects are designed, missions are planned and how science is developing because everything is trying to address this question of great public interest. But it also shows to me that there is an intrinsic curiosity in exoplanets in a big part of the population. That is good.

"Of course it's a super interesting question and I would love to contribute to it, and I think I do that by providing a better understanding of planetary systems. I don't think I have the capability to find a habitable planet with HATNet, but telescopes are increasing in size and detection methods are improving. There is a chance that scientists will detect a biosignature in the atmosphere of a nearby planet. That would be in terms of its significance greater than the Copernican Revolution [the acceptance that the sun rather than the Earth is at the center of the solar system, as proposed by Polish astronomer Nicolaus Copernicus in 1543]. Imagine that someone provides scientific evidence that there is life on a planet around another star. I think anyone with a reasonable understanding of statistics should assume that there is life on other planets in the universe. There are so many stars and planets, there has to be. Yet, providing the scientific evidence would be a major milestone in mankind's perception of nature."

What direction will your research take in the future?

"There are so many planets, the excitement prevents me from doing any substantial work on anything else! We are working on analyzing HAT-P-39, -40 and -41, with another five to be confirmed and published. We are at 40 — it is comfortably above my age. That was one of my goals. I'm 36 and now we have more planets than years I have been alive. I'm trying to keep the rate at one planet per year.

"But together with [Princeton astrophysical sciences] graduate student Xu Huang, we have started working on public data from Kepler [NASA satellite telescope] and she found a lot of transiting planet candidates that have not been found before. I also am collaborating in a Kepler project to find moons around exoplanets, or exomoons, which have not been observed yet. I also am a co-investigator on a proposed space mission [led by the Massachusetts Institute of Technology and selected for consideration by NASA in 2011], Transiting Exoplanet Survey Satellite (TESS), that will scan the entire sky. We hope it will find super Earths, habitable planets and even planets that may be habited." ♥



An artist's impression of HAT-P-1b (foreground), a "hot Jupiter" 453 light years from Earth and one of the lowest density exoplanets known. A hot Jupiter planet is similar to Jupiter but orbits very close to its parent star. HAT-P-1b takes less than five Earth days to circle its sun.

in the classical way of having this big spinning gas cloud with a star forming in the center and this planet migrating in from the cold outer regions. Instead, the planet encountered a violent near collision with another planet, and HAT-P-7b was thrown and almost hit this star. It was on a very eccentric orbit that eventually circularized, but when this other planet shot it into the system, HAT-P-7b happened to be orbiting in the opposite direction of the star.

"It was a violent, random interaction. In our solar system, we don't see this. Everything circles in the same direction and is in neat order. Our view on solar systems is very different now thanks to discoveries like this.

"Our understanding of these worlds is still being shaped and will very significantly change in the next decade, I'm sure, judging by how our understanding has changed in the past decade. Planets are part of the universe. Planet formation is part of star formation. We have several hundred exoplanets known so far, but there are billions and billions of planets in the universe. We better understand how they come to exist and what their fate is."