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Two Penn Seniors: Rhodes Scholars

Two University of Pennsylvania seniors have been awarded Rhodes Scholarships for graduate study at the University of Oxford. Christopher D'Urso of Colts Neck, New Jersey, has been awarded an American Rhodes and Adnan Zikri Jaafa, of Malaysia, has been awarded a Malaysian Rhodes.

"All of us at Penn are enormously proud of Chris and Zikri," said Penn President Amy Gutmann. "Our newest Rhodes scholars share a passion for community engagement, human rights and social justice. Their work embodies the finest attributes of Penn scholars who are working to make a profound difference in the world. Chris has focused on consumer protection and advocacy as the founder of Penn CASE, which is providing education and support to local consumers in our community. He also has been actively engaged on the Task Force on a Safe and Responsible Campus Community. Zikri's undergraduate research has focused on social-impact bonds. He also has done volunteer work with refugees and has been an ambassador for Penn Giving What We Can. Chris and Zikri are extraordinarily talented, engaged and committed individuals who are deeply deserving of this preeminent recognition."

Considered one of the most prestigious academic honors, the Rhodes is highly competitive. According to the Rhodes Scholarship Trust, this year more than 2,500 American students sought endorsements nationwide. The 32 American Rhodes Scholars were then selected from 866 students endorsed by 299 colleges and universities nationwide.

Christopher D'Urso is pursuing his bachelor's in international relations with a minor in Hispanic studies and also a master of public administration with a certificate in politics from Penn's Fels Institute of Government.

In 2015, he founded Penn CASE, or Penn Consumer Assistance, Support and Education, which has provided consumer advocacy to more than 1,500 people locally. He is also the co-chair of the University Honor Council, the editor-in-chief of the Sigma Iota Rho *Journal of International Relations* and a member of the President



Adnan Zikri Jaafar



Christopher D'Urso

and Provost's Task Force on a Safe and Responsible Campus Community.

At Oxford, Mr. D'Urso plans to pursue a master's in criminology and criminal justice, as well as global governance and diplomacy.

Adnan Zikri Jaafar is enrolled in the Huntsman Program in International Studies in Business offered through Penn's School of Arts & Sciences and Wharton School. He is majoring in finance, statistics and international studies, with a minor in mathematics, economics and philosophy.

At Penn, he has served as a Fox Research and Service Fellow and a Wharton Research Scholar, and this summer he conducted research on zakat, the practice of alms-giving in the Islamic faith and on social-impact bonds to assess alternative approaches to improving the impact of zakat distribution in his home country. He volunteers for the PA Refugee Task Force in Philadelphia and Syrian refugee schools in Irbid, Jordan, and is an ambassador for Penn's Giving What We Can.

At Oxford, Mr. Jaafar will pursue a master's degree in evidence-based social intervention and policy evaluation, along with a master's in financial economics.

Mr. D'Urso and Mr. Jaafar applied for the Rhodes Scholarship with assistance from Penn's Center for Undergraduate Research and Fellowships. These two 2018 awards bring the number of Penn Rhodes Scholars to 26.

Peter Holquist:

Ronald S. Lauder Endowed Term Associate Professor of History

Peter Holquist, associate professor of history, has been appointed Ronald S. Lauder Endowed Term Associate Professor of History. Dr. Holquist is a leading scholar of Russian and European History.

He served as founder and editor of the journal *Kritika: Explorations in Russian and Eurasian History* from 1999 to 2010, and serves on the editorial board of the *Journal of Modern History*. Dr. Holquist is the author of the book *Making War, Forging Revolution: Russia's Continuum of Crisis, 1914-1921*.

His research has received support from the Social Science Research Council, the American Council of Learned Societies, and the Harry Frank Guggenheim Foundation.

Dr. Holquist is currently serving as graduate chair of Penn's history department. He has also served as a member of the SAS Committee on Undergraduate Academic Standing and the Faculty Fulbright Committee.

This chair was established in 1991 by the Honorable Ronald S. Lauder, W' 65. He is the Chairman of Clinique Laboratories and President of RWL Water. He previously served in the Pentagon as Deputy Assistant Secretary for Defense for European and NATO Affairs and as U.S. Ambassador to Austria. Mr. Lauder is active in a number of philanthropic activities, including the establishment of the Ronald S. Lauder Foundation, as well as organizations dedicated to Jewish welfare and the preservation of Jewish monuments and buildings.

At Penn, he co-founded the Joseph H. Lauder Institute for Management and International Studies in 1983 with his brother Leonard A. Lauder, in honor of their father, Joseph H. Lauder. He is currently Chairman of the Lauder Institute's Board of Governors.

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Prior Penn Rhodes Scholars

Rhodes Scholarships, the oldest international fellowships, have been awarded by the Rhodes Scholarship Trust since the death of Cecil Rhodes in 1902.
Adebisi (Debi) Ogunrinde, 2016 (*Almanac* December 8, 2015) Canadian Rhodes
Jennifer Hebert, 2016 (*Almanac* November 24, 2015)
Rutendo Chigora, 2015 (*Almanac* December 16, 2014) Zimbabwean Rhodes
Sarah-Jane Littleford, 2010 (*Almanac* December 22, 2009) Zimbabwean Rhodes
Abigail Seldin, 2009 (*Almanac* December 9, 2008)
Joyce Meng, 2008 (*Almanac* December 4, 2007)
Brett Shaheen, 2006 (*Almanac* December 6, 2005)
David Ferreira, 2005 (*Almanac* February 3, 2004)
Lipika Goyal, 2001 (*Almanac* December 12, 2000)

Theresa Simmonds, 1991
Joseph Torsella, 1986
Stephanie Dangel, 1984
Patrick M. Norton, 1969
John Edgar Wideman, 1963
Frederic Ballard, 1939
Walter Chudson [Chudnowsky], 1934
William Ezra Lingelbach, Jr., 1926
Milton Charles Nahm, 1926
Raymond Harvey Jack, 1923
John Valentine Lovitt, 1920
John Murdock Clarke, 1919
Morrison Comegys Boyd, 1914
Richard Schellens, 1908
Ellis Thomas Robins, 1904

The following agenda is published in accordance with the Faculty Senate Rules. Any member of the standing faculty may attend SEC meetings and observe. Questions may be directed to Patrick Walsh, executive assistant to the Senate Office, either by telephone at (215) 898-6943 or by email at senate@pobox.upenn.edu

Faculty Senate Executive Committee Actions Wednesday, November 29, 2017

Chair's Report. Faculty Senate Chair Santosh Venkatesh updated SEC members on the status of the Teach-In, which will be held at various venues on campus between March 19-22, 2018. A website will be launched in January and more detailed event information will be provided at SEC's next meeting.

Past-Chair's Report. Faculty Senate Past Chair Laura Perna reported on the work of the Capital Council and the Academic Planning and Budget Committee. She also informed the group of the upcoming meeting of the Campaign for Community Steering Committee (to be held December 7).

Update from the Department of Public Safety. Vice President for Public Safety Maureen Rush reported on the outcomes of spring 2018 Task Force on a Safe and Responsible Campus Community. "Identified Off-Campus Groups" have been asked to register their social occasions with the Vice Provost for University Life so that University officials can be made aware of the event. Event registration of this nature was implemented for all on-campus groups (including Greek organizations) in 1997 following a Task Force designed to address alcohol use at student gatherings. As of fall 2017 off-campus groups must register their parties as well. Registered parties that serve alcohol must contract with official event security personnel and TIPS (Training for Intervention ProcedureS)-trained bartenders. Non-compliant student groups are asked to attend an educational session explaining the safety-related importance of registering their events with the University. A working group will soon convene to determine whether punitive sanctions should be implemented. The Task Force's work has contributed to minimizing student-on-student violence in the residential areas near campus and improving relations with neighborhood residents. Students also appear to be more cooperative when Penn Police or official Event Observers knock on doors during parties. Vice President Rush then discussed other matters related to the work of the Department. Since its implementation in 2015, the HELP Line has contributed to several saved lives. She encouraged faculty members seeking to assist students to contact the HELP Line (215) 898-HELP or CAPS directly (215) 898-7021, both are available 24/7. All these services work in tandem with Student Intervention Services (a division of the Department of Public Safety).

Moderated Discussion. Professor Venkatesh engaged SEC members in a discussion on a number of pre-identified topics, including implicit bias training for faculty and staff, mentorship of junior faculty, and effects of proposed changes in federal tax legislation on graduate students, the endowment, and charitable giving. Time will be devoted in future meetings to address these and other topics of interest to SEC members.

Call for College House Fellows

The Offices of the Provost and of College Houses and Academic Services invite applications for service as a College House Fellow. This is a residentially-based position that carries a two-year term.

Faculty applicants from all 12 schools within the University are welcome to apply. The most important qualification is an enthusiastic interest in mentoring and engaging undergraduate students within the residential setting. Members of the University's faculty and full-time administrative staff in academic or student affairs who will be in their positions for at least two years are welcome to apply.

College House Fellows play a key role in connecting the Houses to the larger academic community at Penn. Fellows are responsible for working with the Faculty Directors to develop each College House as an educational resource that encourages intellectual inquiry, promotes academic programs in residence, fosters faculty and student interaction and builds strong, supportive House communities. Specific responsibilities will differ from House to House, but the general time commitment is approximately 10 hours per week.

Although there are 25 Fellow positions in the College House system, the number of openings rarely exceeds six. For these highly-sought-after positions, the selection process can be quite competitive. Applicants are reviewed by the Undergraduate Deans, the Office of College Houses, and the individual House community members, including the Faculty Director, House Dean and student residents.

Information about each College House, the Fellow positions and application process may be found at www.collegehouses.upenn.edu Please explore the "join us" section of the website for position information. If you have any questions please contact Marty Redman, executive director of College Houses and Academic Services, at mredman@upenn.edu

Deaths

Edward S. Herman, Wharton

Edward S. Herman, emeritus professor of finance at the Wharton School, died on November 11. He was 92 years old.

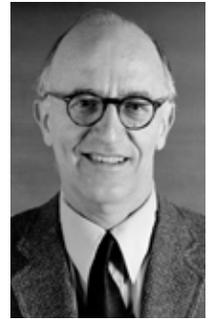
Dr. Herman was born in Philadelphia to a family of liberal Democrats. He studied economics at the University of Pennsylvania, receiving bachelor's and master's degrees, before finding a mentor in Robert A. Brady, a University of California at Berkeley professor who analyzed the economic systems of fascist societies. Dr. Herman received a doctorate in economics at Berkeley in 1953. He joined Penn in 1958 as a lecturer and he became an associate professor in 1961 and a professor in 1970. He retired in 1989 as professor emeritus. He was an economist and media analyst with a specialty in corporate and regulatory issues, as well as political economy.

He criticized "humanitarian wars" in Iraq and Vietnam, and lambasted mainstream media outlets. Dr. Herman was an economist who collaborated with scholar and political activist Noam Chomsky on blistering critiques of U.S. foreign policy and the mass media, most influentially with their book *Manufacturing Consent* in 1988. It was adapted into a 1992 documentary of the same name. They also wrote *The Political Economy of Human Rights* and *Counter-Revolutionary Violence*. Compilation of his work, *The Myth of the Liberal Media: An Edward Herman Reader*, with Robert W. McChesney, was published in 1999. More recently they collaborated on *The Washington Connection and Third World Facism* and *After the Cataclysm*, both in 2015.

Dr. Herman was "one of the top progressive media critics," said Jeff Cohen, founder of the left-leaning media watch group FAIR. In large part, his eminence was a result of his collaboration with Dr. Chomsky. Both men were academics—Dr. Herman was an expert on banking and corporate power structures; Dr. Chomsky was a pathbreaking linguist—who became political dissidents during the Vietnam War.

Dr. Herman received primary credit for the book, which outlined a "propaganda model" of American mass media, arguing that news coverage was shaped largely by "market forces, internalized assumptions and self-censorship."

Dr. Herman's wife of 67 years, the former Mary Woody, died in 2013. Dr. Herman married Christine Abbott, a longtime friend, two years later. In addition to his wife, survivors include a brother, Harris.



Edward Herman

To Report A Death

Almanac appreciates being informed of the deaths of current and former faculty and staff members, students and other members of the University community. Call (215) 898-5274 or email almanac@upenn.edu

However, notices of alumni deaths should be directed to the Alumni Records Office at Room 517, Franklin Building, (215) 898-8136 or email record@ben.dev.upenn.edu

Marion Kreiter, Math Physics Library

Marion Kreiter, a retired Penn math-physics librarian, died on November 18 at the age of 96.

Ms. Kreiter earned her bachelor's degree in 1943 at Cornell University and a degree in library science at Columbia University. After that she briefly served as a civilian librarian for the U.S. Army in Manila, the Philippines and Okinawa. She also worked in Sacramento, California and Rapid City, South Dakota as a librarian before joining the University of Pennsylvania. Ms. Kreiter served as the head of the math-physics library from 1952 until she retired in 1986. After she retired, she volunteered at the Tyler Arboretum and was active in the Powelton Village Civic Association.

Ms. Kreiter was survived by her cousin, Anne and Anne's husband, Wasyl Polischuk.

Donations in her name may be made to St. Agatha-St. James Church, 3728 Chestnut Street, Philadelphia, PA 19104 or to the Powelton Village Civic Association, PO Box 7616, Philadelphia, PA 19101-7616 (with Tot Lot noted).

James H. Robinson, Sr. Community Relations

James (Jim) H. Robinson, Sr., the long-time director of Penn's Community Relations, died on September 13 at the age of 88.

Mr. Robinson joined the University of Pennsylvania as an assistant for external affairs to President Gaylord Harnwell, in January 1970. The following January, Penn President Martin Meyerson named Mr. Robinson to the newly created position of equal opportunity administrator. In 1979 he was named the director of the Office of Equal Opportunity (*Almanac* September 27, 1979).

Penn President Sheldon Hackney named Mr. Robinson the director of Community Affairs in 1982, noting that he had already been successful in several activities at Penn. He was a United Way (the precursor to Penn's Way) coordinator whose efforts led to an increase in participation. In 1984, his title changed to director of Community Relations, a position he held until he retired in 1989. He had been a key figure in maintaining ties with the neighborhood groups, coordinating monthly breakfast meetings focused on issues from economic development to safety.

After retiring, Mr. Robinson was a board member at Ralston Center and at the Joseph J. Hill Ralston Mercy Douglass House at Presby.

He is survived by a son, Jim, Jr., a daughter, Kirstin, a grandson, Sean, a granddaughter Kenedall, and a cousin, Geneva McCullers.

WXPN Policy Board Meeting

The WXPN Policy Board Meeting will be held on Tuesday, December 12, at noon at WXPN, 3025 Walnut Street. It is open to the public. For more information call (215) 898-0628.

Penn Trustees: December 14

A meeting of the Executive Committee of the Trustees will be held on Thursday, December 14, 2017, in the Woodlands Ballroom, Inn at Penn. A meeting of the Budget & Finance Committee will be held that same day. Meeting times are as follows:

9:30-10 a.m.

Budget & Finance Committee

12:40-1 p.m.

Meeting of the Executive Committee

From the President and Provost

November 20, 2017

A Message to the Penn Community:

Responding to the Campus Conversation

We write to follow up on the Campus Conversation that was held on October 30 at the Zellerbach Theatre. The Conversation was part of an ongoing effort, which will continue throughout this academic year and beyond, to further strengthen and support the health and wellness of our students.

We are grateful to the several hundred Penn students, faculty and staff who took time that evening to attend the Conversation, hear from experts in the field, and break into smaller groups to share their concerns and suggestions. We have now had an opportunity to digest the comments that grew from the breakout discussions, as well as others that have come in through the Campaign for Community website, and we encourage you to continue to submit your ideas and suggestions on that website.

In response to the Conversation and these comments, we are taking two immediate steps. First, we are committing funds to add five additional full-time staff members at CAPS to enable expansion of hours and a reduction in wait times. The staff at CAPS do an extraordinary job in caring for our students. Yet it was clear from the Campus Conversation that, even with the investments we have made to date, greater access to CAPS services is among the highest priorities for our community. In addition, to optimize the impact of these additional staff members, we will fast-track a CAPS process and operations review to ascertain any further service refinements to support our students. Any resulting recommendations will be promptly implemented.

Second, we are launching a Campaign for Wellness, which will operate under the umbrella of our successful Campaign for Community. The Campaign will follow through on some of the excellent suggestions that arose from the breakout sessions at the Conversation, which were planned to ensure that everyone had an opportunity to share their thoughts and ideas, as well as the comments submitted online. It will include additional conversations and dialogue with students throughout the year, developing new programs and initiatives to support an even healthier college experience. These initiatives will include expanded programming in the College Houses and the Division of Recreation, a reinvigorated "take your professor to lunch campaign," and a comprehensive website of programs, activities, and resources for wellness. At the same time, we are exploring ideas, both big and small, that will help us create a less stressful climate while supporting our goals of academic excellence. We welcome your ideas and plan to take further steps in new directions in the months ahead.

The health and wellness of the Penn community are our highest priorities. The Campus Conversation was merely the start of what we hope will be a comprehensive wellness campaign. We look forward to continuing the conversation to ensure we are doing all that is possible to sustain a community in which everyone can thrive.

—Amy Gutmann, President

—Wendell Pritchett, Provost

Staying Up-to-Date with the Human Capital Management Initiative

The Human Capital Management (HCM) Transformation Initiative is in full swing. This University-wide effort will simplify human capital-related processes and implement a modern system powered by Workday. After selecting software and software integration partners in July, HCM has continued to make progress, including:

- Staffing the Functional, Technical, and Service Delivery teams with subject-matter experts, many drawn from across Penn, along with Workday experts from integration partner Deloitte.
- Partnering with schools and centers to create the Change Agent Network (CAN).
 - CAN members will facilitate two-way communication, act as a resource for information and support, and help their Schools and Centers prepare for change.
 - The kickoff meeting for CAN was November 30.
- Planning the launch of a central resource for HCM-and Workday-related inquiries.
 - Beginning in early 2018, this resource center will provide assistance on select subjects to a group of early-adopter schools and centers. The lessons learned with these partners will help refine practices and improve service.
 - When fully rolled out in 2019, the resource center will serve as a one-stop shop for faculty, staff, schools, and centers, with trained customer service professionals providing accurate, timely answers to HCM- and Workday-related inquiries.

You can keep up on all the news from HCM with the HCM Update. The monthly e-newsletter brings you team updates, resources to help prepare for change, information about upcoming events, and more.

Read the first HCM Update and sign up to receive future issues by email at www.hr.upenn.edu/hcm/news. Login may be required for some content online.

Visit the HCM website at <https://www.hr.upenn.edu/hcm> for more information, or email hcm-announcement@upenn.edu

—Human Capital Management Transformation Initiative

Honors & Other Things

Stephanos Bibas: U.S. Court of Appeals for the Third Circuit

The United States Senate confirmed *Stephanos Bibas*, professor of law and criminology at the University of Pennsylvania Law School and director of Penn Law's Supreme Court Clinic, for a seat on the U.S. Court of Appeals for the Third Circuit. He was nominated for the seat by President Trump in June (*Almanac* August 29, 2017).



Stephanos Bibas

"We are incredibly proud that Stephanos Bibas has been confirmed to serve on the Third Circuit," said Ted Ruger, dean of Penn Law and Bernard G. Segal Professor of Law. "He possesses all the skills to excel on the federal bench: he is a deeply insightful legal scholar, an accomplished appellate advocate, and an outstanding teacher. The Third Circuit will be adding an exceptional jurist to its ranks."

The American Bar Association's Standing Committee on the Federal Judiciary unanimously rated him "Well Qualified" as a judicial nominee, their highest ranking. Upon his nomination, more than 100 law professors from across the country, 55 of his colleagues on the Penn Law faculty, and dozens of his former law students wrote the Senate Judiciary Committee expressing their support for his nomination.

Professor Bibas, a noted scholar of criminal procedure, has argued multiple times in front of the U.S. Supreme Court and is a former federal prosecutor. At Penn Law, he teaches courses on criminal procedure and directs the Law School's Supreme Court Clinic, where students have the opportunity to work on real Supreme Court cases. He is the author of *The Machinery of Criminal Justice* (Oxford University Press, 2012) and *Rebooting Justice: More Technology, Fewer Lawyers, and the Future of Law* (with Benjamin H. Barton, Encounter Books, 2017).

In the 2010 Supreme Court case *Padilla v. Kentucky*, Professor Bibas and his co-counsel successfully persuaded the Court that noncitizen defendants had the right to accurate information about deportation before they plead guilty. In 2014, he and the Supreme Court Clinic also secured the right of the heir to the author of the screenplay *Raging Bull* to pursue claims against MGM Studios in *Petrella v. Metro-Goldwyn-Mayer*.

Prior to joining the Penn Law faculty, Professor Bibas served as an Assistant U.S. Attorney for the Southern District of New York, where he prosecuted narcotics, robbery, fraud, and other cases.

Following his graduation from Yale Law, he served as a law clerk to Judge Patrick Higginbotham of the U.S. Court of Appeals for the Fifth Circuit and Justice Anthony Kennedy of the Supreme Court.

He joins several other judges with connections to Penn Law who currently sit on the Third Circuit. Senior Judge *Dolores Korman Sloviter*, L'56, and Judge *Patty Shwartz*, L'86, are Penn Law graduates, Judge *Kent A. Jordan* and Judge *Cheryl Krause* are current adjunct professors of law, Judge *Luis Felipe Restrepo*, C'81, is a recent adjunct professor of law, and Senior Judge *Anthony Scirica* is a Senior Fellow at the Penn Law School.

Wendy Grube: MOH Cancer Award

The Order of the Bell Award from Mountains of Hope (MOH), West Virginia's statewide cancer coalition, is bestowed upon an individual who is "breaking barriers."

University of Pennsylvania School of Nursing's *Wendy Grube*, practice associate professor and interim director of the Center for Global Women's Health, was recently honored with this inaugural award for her efforts in breaking barriers in public health. The concept of the award is based on the concept of the Bell X-1 aircraft that Chuck Yeager, a West Virginia native, flew when he broke the sound barrier.

Dr. Grube has worked in rural West Virginia, West Virginia, for more than a decade. Each year she brings a group of nursing students to provide a Women's Health Screening Day to county residents. Together, they have screened more than 300 women. Dr. Grube and her students also conduct fundraising activities to provide financial assistance in support of the screening clinics.

MOH consists of approximately 200 members from across the Mountain State who work to address specific goals in the West Virginia Cancer Plan. Its steering committee created a series of awards in 2016 to recognize the hard work and dedication of members who often work diligently without recognition.



Wendy Grube

Lou Soslowsky: ASME Medal

Lou Soslowsky, Fairhill Professor and director of orthopaedic research in the Perelman School, was awarded the H. R. Lissner Medal from the American Society of Mechanical Engineers (ASME). The H.R. Lissner Medal is a society level award that recognizes outstanding achievements in the field of bioengineering, and is the single highest honor that one can achieve in the bioengineering community. The inscription on his Lissner Medal will read: "for outstanding contributions toward the understanding, prevention and treatment of musculoskeletal injuries to tendinous and ligamentous tissues; and for internationally recognized leadership in the biomechanics community". Dr. Soslowsky will give a plenary lecture and receive the award at the World Congress of Biomechanics in Dublin, Ireland, this coming summer.



Lou Soslowsky,

Charles Yang: Leonard Bloomfield Book Award

The Linguistic Society of America announced that *The Price of Linguistic Productivity: How Children Learn to Break the Rules of Language* by *Charles Yang*, professor in the department of linguistics and director of undergraduate studies in cognitive science, is the recipient of this year's Leonard Bloomfield Book Award.

The book was published by the MIT Press.

The Leonard Bloomfield Book Award is presented to the book "that makes an outstanding contribution of enduring value to our understanding of language and linguistics." Nominees are judged on their novelty, empirical import, conceptual significance, and clarity. The Bloomfield Book Award, named in honor of renowned linguist (and LSA founding member) Leonard Bloomfield, was first awarded in 1992; previous recipients have included *The Atlas of North American English* (by Penn professor of linguistics William Labov, Sharon Ash, and Charles Boberg) and *The Bilingual Child: Early Development and Language Contact* (by Virginia Yip and Stephen Matthews).

The citation for this award reads, "Charles Yang proposes a simple rule relating the number of exceptions that a productive rule of grammar can tolerate to the number of regular cases it generates, and provides a diverse set of case studies, including data concerning the course of child language acquisition. The case-studies suggest that it applies with great generality across languages, and across different distributions of regular and irregular forms. His book will be read by linguists, psychologists, cognitive scientists and all who are concerned with questions of the fundamental nature of human language."

Wharton Undergraduate Team: First Place at International Real Estate Competition

Six undergraduate students from the Wharton School at the University of Pennsylvania took home the first place title and top prize of \$10,000 from the Cornell International Real Estate Case Competition, November 13-14, in New York City.

Seniors *Amrajan Auja* of Vancouver, B.C., *Elena Clarfield* of Malibu, California, and *Elizabeth Powers* of Cleveland; juniors *Carol Chen* of Taiwan and *Thomas Wu* of Vancouver, B.C.; and sophomore *Katherine Salvatori* of Sarasota, Florida, delivered the best proposal for a hypothetical investment opportunity.

On a Thursday competitors were provided a case based on a real retail property located in a major retail corridor in Madrid. By Monday evening, the team from Wharton and their peers had to submit final investment strategies.

"They worked creatively and quickly over the weekend, dividing tasks and running the numbers for a range of scenarios regarding changing forecasts for economic conditions," said Benjamin Keys, the faculty advisor for the case competition and assistant professor of real estate at Wharton.

The case required the students to weigh the costs and benefits of the investment property, research the Madrid retail market and develop a "pro forma analysis" that outlined the possible risks and returns in order to recommend a specific investment plan.

"They had a great vision for how to approach this project and make the most compelling presentation possible. Their final presentation was polished, professional and quite nuanced given that they only had 15 minutes to present it to the case judges, who are industry professionals," Dr. Keys said. "I was deeply impressed by their approach and expect that this group of students has a great future in similar real-life deals ahead of them." (Honors continued on page 5)

Seven Penn Faculty Members: National Academy of Medicine

Seven University of Pennsylvania faculty members have been elected to the National Academy of Medicine (NAM), one of the nation's highest honors in biomedicine. They are among 70 new U.S. and 10 international members.

The NAM, formerly the Institute of Medicine, was established in 1970 to advise the nation on medical and health issues. Members are elected by their peers for their accomplishments and contributions to the advancement of the medical sciences, health care and public health. The newly elected members bring the total membership to 2,127 and international members to 172. With these new members, Penn's total in NAM is 66.

The new Penn inductees are:

Lewis A. Chodosh, is chair of the department of cancer biology; professor of medicine; associate director for basic science, Abramson Cancer Center; and co-director of the 2-PREVENT Translational Center of Excellence at the Perelman School of Medicine. His research focuses on mechanisms of cancer progression using basic, translational and clinical approaches, with an emphasis on preventing and treating breast cancer recurrence. Particular areas of interest include: pathways regulating cancer development, metastasis, tumor dormancy and recurrence, the use of genomics and computational approaches to understand genetic programs in cancer, the effect of obesity on cancer recurrence, how pregnancy protects against breast cancer and the use of non-invasive imaging approaches to study tumor biology. He is editor-in-chief of *Breast Cancer Research* and serves on the scientific advisory boards of the Dana-Farber/Harvard Cancer Center and the Harvard Nurses' Health Studies I and II.

Christos Coutifaris, is the Celso-Ramon Garcia Professor of Obstetrics and Gynecology and chief of the division of Reproductive Endocrinology and Infertility at the Perelman School of Medicine. His research focuses on understanding the cellular and molecular basis of human trophoblast function and abnormal development of the placenta. (The trophoblast supplies the embryo with nourishment.) He has served on and chaired many federal advisory committees and review panels and is chair of the oversight committee for the perinatal research branch of the Eunice Kennedy Shriver National Institute of Child Health and Human Development. He was president of the Society of Reproductive Endocrinology and Infertility and on the executive board of the American College of Obstetricians and Gynecologists. He is president-elect of the American Society for Reproductive Medicine.

Maria A. Oquendo, is the Ruth Meltzer Professor and chair of psychiatry at the Perelman School of Medicine. Her research is on the neurobiology and pharmacologic treatment of mood disorders, with an emphasis on suicidal behavior and global mental health. She is internationally recognized for using PET and MRI to map brain abnormalities in mood disorders and suicidal behavior. She is president of the International Academy of Suicide Research, serves on the National Advisory Mental Health Council and is past president of the American Advisory Psychiatric Association and the American Society of Hispanic Psychiatry. She has received more than a dozen professional awards, most recently the American College of Psychia-

trists' Award for Mood Disorders Research.

Michael S. Parmacek, is the Frank Wister Thomas Professor of Medicine and chair of the department of medicine at the Perelman School of Medicine. He has made key discoveries for understanding the molecular and genetic basis of congenital heart disease, atherosclerosis, aortic aneurysm and dissection and heart failure. He has published in such journals as *Science*, the *New England Journal of Medicine*, *Proceedings of the National Academy of Sciences*, and *Genes & Development*. He was president of the Association of Professors of Cardiology; elected as fellow and established investigator by the American Heart Association and fellow by the American College of Cardiology; served on the Advisory Council of the National Heart, Lung and Blood Institute; and was founding director of Penn's nationally renowned Cardiovascular Institute.

Therese S. Richmond, is the Andrea B. Laporte Professor of Nursing and associate dean for research and innovation at the School of Nursing. An international leader in injury science, Dr. Richmond conducts research on the psychological effects of injuries in order to reduce disability, depression and post-traumatic stress disorder, with a goal of improving recovery and overall quality of life. She targets low-resource urban populations, which experience a disproportionate share of injuries and violence. Her pioneering work has demonstrated that the psychological effects of trauma, rather than physical injury alone, can dramatically affect quality and pace of recovery. Her professional recognition includes selection to the Sigma Theta Tau International Nurse Researcher Hall of Fame and receipt of the American Association of Critical-Care Nurses/GE Healthcare Pioneering Spirit Award.

Dorothy E. Roberts, is a Penn Integrates Knowledge Professor with joint appointments in the departments of Africana studies and sociology in the School of Arts and Sciences and the Law School, where she holds the inaugural Raymond Pace and Sadie Tanner Mossell Alexander Chair of Civil Rights. Professor Roberts, an acclaimed scholar of race, gender and the law, focuses on issues in health, social justice and bioethics, especially as they affect the lives of women, children and African-Americans. She is the author of four books and more than 100 scholarly articles and book chapters, as well as co-editor of six books on such topics as constitutional law and women and the law. She serves on the board of directors of the American Academy of Political and Social Science. Recent recognition of her work includes the Society of Family Planning 2016 Lifetime Achievement Award and American Psychiatric Association 2015 Solomon Carter Fuller Award.

Flaura K. Winston, is a distinguished chair in the department of pediatrics and founder and scientific director of the Center for Injury Research and Prevention at the Children's Hospital of Philadelphia. She is also a professor of pediatrics at the Perelman School of Medicine. Her research includes improving child-passenger safety, preventing teen and young-driver crashes and addressing post-traumatic stress after injury. Her work has led to patents and a startup company, Diagnostic Driving, Inc., which provides virtual driving assessments to corporate fleets, universities and other organizations. It is also being used in driv-

er licensing centers in the state of Ohio. She is associate editor of *Injury Prevention*; has served on several U.S. federal study sections, committees and advisory panels; and held executive committee positions with the American Academy of Pediatrics and the Secretariat for the International Society for Child and Adolescent Injury Prevention.

Four Penn Faculty Members: AAAS

Four members of the University of Pennsylvania faculty have been named Fellows of the American Association for the Advancement of Science. Election as an AAAS Fellow is an honor bestowed upon members of AAAS, the world's largest general scientific society, by their peers.

These Penn professors are among 396 members awarded the honor this year because of their scientifically or socially distinguished efforts to advance science or its applications.

The new Penn AAAS Fellows are:

Gustavo D. Aguirre, professor of medical genetics and ophthalmology in the School of Veterinary Medicine, was selected for "distinguished contributions to the field of inherited blindness, particularly for the identification of blindness-causing genes and development of gene therapy to treat blindness." Dr. Aguirre's research spans several vision disorders, including Leber's congenital amaurosis, Best disease and retinitis pigmentosa. His approach to developing genetic therapies for dogs has paved the way to clinical trials in humans.

Daniel José Mindiola, Presidential Professor in the School of Arts and Sciences' department of chemistry, was selected for "seminal contributions in the construct of unusual complexes having reactive metal-ligand multiple bonds and their role in carbon-hydrogen or carbon-hydrogen activation and functionalization." A research goal of Dr. Mindiola's team is to convert natural gas or shale gas into more value-added materials and take advantage of the energy stored in the carbon-hydrogen bonds without burning these natural resources.

Hongzhe Li, professor of biostatistics in biostatistics and epidemiology in the Perelman School of Medicine, was selected for "distinguished contributions to statistical genetics methodology, promotion of statistical reasoning in society and modeling of high dimensional genomic and metagenomic data." His research interests include statistical genetics/genomics and metagenomics, the study of the genetic material of entire microbial communities in environmental samples, with the goal of understanding the genetic and genomic bases of complex biological systems, including the initiation and development of human diseases.

Anil K. Rustgi, chief of the Division of Gastroenterology in the Perelman School of Medicine, was selected for "contributions to cancer biology, including the identification of p120 catenin, a protein located in the cytoplasm of cells, as a tumor suppressor, and for insights into the tumor microenvironment." His research interests include oncogenes, mutated normal genes that contribute to tumor growth, tumor suppressor genes and the molecular genetics of GI cancers, including those of the colon, pancreas and esophagus. He has been a leader in 3D culture systems.

This year's fellows will be formally recognized on February 17, 2018 during the AAAS annual meeting in Austin, Texas.

ISC Service Rates and Invoices for FY '19

ISC plans to hold most rate-based services steady for FY '19. The Central Service Fee (CSF) rate will increase by 2.41% effective July 1, 2018. The FY '19 rates are a result of a comprehensive review that took place in partnership with the Penn IT Planning Task Force (ITPTF). See <https://www.isc.upenn.edu/about-itptf>. All ISC service rates for FY '19 are available at www.isc.upenn.edu/rates-service-list.

For help determining the services you need, please visit the ISC Client Care website at www.isc.upenn.edu/help or call 8-1000.

—Tom Murphy, Vice President for Information Technology and University Chief Information Officer

ISC Rates for the Following Services will Remain the Same for FY '19

ISC Rate-Based Service	FY '19 Service and Rates Page
PennO365 email	www.isc.upenn.edu/penno365-rates
PennNet Ethernet Ports (Data Ports)	www.isc.upenn.edu/pennnet-ethernet-ports-rates
Penn Video Network	www.isc.upenn.edu/phone-tv-video
PennNet Phone	www.isc.upenn.edu/pennnet-phone-rates
Traditional Telephony	www.isc.upenn.edu/traditional-telephony-rates
Wireless at Penn	www.isc.upenn.edu/wireless-at-penn-rates

ISC Invoices—Your New ISC Bill via ISC's Apptio "Bill of IT"

ISC continues its move to more transparent, easy-to-understand IT bills using Apptio, ISC's new "Bill of IT" service. With more than 50% of ISC invoices managed by Apptio, ISC is well on its way to managing the vast majority of client bills with Apptio by the end of this fiscal year.

ISC's Apptio provides clients:

- Automated bill notifications and consolidated access to ISC invoices
- Self-service invoice details, exportable to Microsoft Excel
- Fiscal year-to-date trends for IT charges and service consumption
- Dashboard summary of ISC invoices and trends to inform budgetary conversations

To request access to your departments' invoices, go to <https://www.isc.upenn.edu/apptio> and follow the instructions. An email confirmation will be sent after your account is created that will include instructions for accessing Apptio.

Take the Worry Out of Snow Days with Snow Day Child Care

Penn's Snow Day Child Care program offers backup child care for benefits-eligible faculty and staff when inclement weather closes schools in the Philadelphia School District but Penn remains open.

The program is offered in partnership with the Penn Children's Center, and is available to children ages 12 weeks to 12 years. The University covers most of the cost, but there is a daily fee based on your Penn salary, the age of your children, and the number of children you place in care. Fees are listed at <https://www.hr.upenn.edu/PennHR/wellness-worklife/family-care/snow-day-child-care>.

Snow Day Child Care is available between *December 4 and March 30*, but parents must register before there is a snow day by completing an online application at <http://cms.business-services.upenn.edu/childcare/temporary-childcare/snow-day-care.html>

For more information, call the Penn Children's Center at 215-898-5268.

For more Work-Life programs and services, visit <https://www.hr.upenn.edu/wellness-worklife>.

—Division of Human Resources



Marking the 100th Anniversary of Rodin's Death

2017 is the 100th anniversary of sculptor Auguste Rodin's death.

Jean D'Aire (at left), the bronze made in 1889 by Rodin (French, 1840–1917) is in the Steinberg Hall-Dietrich Hall Atrium. Jeffrey Loria donated this sculpture to Penn in 1983 while his daughter was a student at the University. The following year it was stolen but then recovered by the FBI and was subsequently returned to Penn where it has been located for more than three decades.

Rodin is an impressive figure in art. His work *The Thinker* is among the most recognized works in all of sculpture and his *The Gates of Hell* and *Burghers of Calais* are esteemed for their detail and mastery.

As a young artist, Rodin was refused entrance to the prestigious École des Beaux-Arts. He therefore went on to work as an apprentice and partner for a number of artists before his own commissions propelled him to international success.

Jean D'Aire is a three-foot nude study for part of Rodin's six-sculpture masterpiece, *Burghers of Calais*. The full *Jean D'Aire* figure in *Burghers of Calais* depicts a gaunt man with clenched fists and a stoic jaw who, along with five other citizens, walks to his execution. The six French city leaders had offered themselves hostages to England's King Edward in exchange for the ceasing of the siege on their city; they were spared at the request of the King's pregnant wife.

One Step Ahead

Security & Privacy
Made Simple

Another tip in a series provided by the Offices of Information Systems & Computing and Audit, Compliance & Privacy

Two-Step Verification Made Easy

As of November 14, 2017, University of Pennsylvania staff are required to use Two-Step Verification as an added layer of security to the PennKey login process. Your school or center IT department likely provided you with some information about the value of using Two-Step Verification. However, you may continue to wonder why the additional step is needed to log in if you already use a secure password.

The answer is simple: it is for the same reason you place a second lock on your house door. The additional lock adds a second security layer to protect your valuable property from intruders or theft.

Similarly, the University of Pennsylvania requires you to use a strong password and Two-Step to protect both its and your own valuable information and computing assets from unauthorized access or theft. Two-Step adds a second layer of security which works just like a second lock on your door. It protects you against hackers, who collect users' passwords by using various social engineering techniques like phishing or by capturing them using hardware or software keyloggers to collect keystrokes.

With Two-Step Verification, you use something you know (your PennKey password) and something you have (e.g., your phone, fob, or a friend) to verify your identity as an authorized user. It's that simple. And while Two-Step is required for staff, faculty and students are encouraged to enroll as well.

For more information or to enroll in Two-Step, visit <http://upenn.edu/two-step>

For additional tips, see the One Step Ahead link on the Information Security website: www.upenn.edu/computing/security/

CLASSIFIED—RESEARCH

CHOP Oncology Research Study, seeking youth ages 10-25. The goal of this research study is to learn more about the differences in growth and bone health between healthy individuals and survivors of differentiated thyroid cancer (DTC). We are currently recruiting survivors of DTC and healthy individuals. If this is something you are interested in learning more about, contact Mackenzie Stratton, strattonm@email.chop.edu; (267) 426-7537. All participants will be compensated for their time and travel.

Almanac is not responsible for contents of classified ad material.

For information, call (215) 898-5274 or visit www.upenn.edu/almanac/faqs.html#ad

American Roots Music at Annenberg Center: December 7



David Rawlings at Annenberg on December 7.

Acclaimed songwriter and guitarist David Rawlings makes his Annenberg Center debut on *Thursday, December 7* at 7:30 p.m. in the Zellerbach Theatre.

His August 2017 release, *Poor David's Almanack*, features a wry mix of acoustic and electric sounds rich in ageless American vernacular. Boasting an "almost supernatural chemistry," the album marks Rawlings' eighth collaboration with singer-songwriter Gillian Welch. The duo, joined by Paul Kowert (of The Punch Brothers), Willie Watson and Brittany Haas, will perform the album's "sweetly engaging, impressively wide-ranging collection of American roots music" (NPR) as well as favorites from previous records.

For tickets, visit, www.annenbergcenter.org or call the Box Office at (215) 898-3900. This performance is co-presented with World Cafe Live.

Irish Christmas in America at Annenberg Center: December 9

This family-friendly performance in the Zellerbach Theatre on *Saturday, December 9* at 8 p.m. features enchanting Irish and Scottish ballads, lively instrumental tunes and spirited Irish dancing, in front of video projections that add a rich historical narrative.

For tickets, visit, www.annenbergcenter.org or call the Box Office at (215) 898-3900.



Canadian Brass at Annenberg Center: December 10



The Canadian Brass perform a mix of classical brass standards and jovial holiday favorites. At Annenberg Center on *Sunday, December 10* at 2 p.m. For more than 45 years, the group has entertained with their signature blend of outstanding music, insightful asides and lighthearted humor. This is a perfect family holiday outing.

The University of Pennsylvania Police Department Community Crime Report

About the Crime Report: Below are the Crimes Against Persons or Crimes Against Society from the campus report for **November 20-26, 2017**. Also reported were 6 crimes against property with 1 arrest (3 liquor laws, 2 frauds, and 1 theft). Full reports are available at: <http://www.upenn.edu/almanac/volumes/v64/n15/creport.html> Prior weeks' reports are also online. — *Eds.*

This summary is prepared by the Division of Public Safety and includes all criminal incidents reported and made known to the University Police Department between **November 20-26, 2017**. The University Police actively patrol from Market Street to Baltimore Avenue and from the Schuylkill River to 43rd Street in conjunction with the Philadelphia Police. In this effort to provide you with a thorough and accurate report on public safety concerns, we hope that your increased awareness will lessen the opportunity for crime. For any concerns or suggestions regarding this report, please call the Division of Public Safety at (215) 898-4482.

11/21/17	2:05 PM	3735 Walnut St	Offender demanded money at bank/Arrest
11/26/17	11:25 AM	3735 Walnut St	Money taken during robbery

18th District

Below are the Crimes Against Persons from the 18th District: 6 incidents with 1 arrest (3 robberies, 1 aggravated assault, 1 assault, 1 domestic assault) were reported between **November 20-26, 2017** by the 18th District covering the Schuylkill River to 49th Street & Market Street to Woodland Avenue.

11/20/17	7:09 PM	506 S 42nd St	Assault
11/21/17	4:55 AM	131 S 46th St	Aggravated Assault
11/21/17	2:06 PM	3735 Walnut St	Robbery/Arrest
11/22/17	10:26 AM	4828 Sansom St	Domestic Assault
11/26/17	12:06 AM	4800 Walnut St	Robbery
11/26/17	11:29 AM	3725 Walnut St	Robbery



Grand Prize (Drawn November 28)

Penn Business Services—Grand Prize— iPad Pro Package (keyboard, cover, case, iTunes gift card) Value \$1,000* *Kristin Mulvenna*, Pennsylvania Hospital

Update

December AT PENN

EXHIBIT

6 *Life on the Edge*: a speculative biodesign exhibition with four responses to a world that is socially, culturally and biologically distressed by humans; 5:30-7:30 p.m., Esther Klein Gallery (Penn's Fine Arts/Integrated Product Design: Biological Design End-of-Year Exhibition).

AT PENN Deadlines

The December AT PENN calendar is now online at www.upenn.edu/almanac The deadline for the January AT PENN calendar is today, *December 5*.

Almanac continues weekly publication with issues on *December 12 and 19*.

After the Winter Break, *Almanac* resumes weekly publication; the first issue of 2018 will be published on January 9. The deadline is *January 2, 2018*.

Call for 2018 Summer Camps

Almanac will run the 2018 compilation of summer camps and programs at Penn in the January 30 issue. To list a camp or other summer program, send the dates, location and other details to almanac@upenn.edu

Deadline for submission is Tuesday, January 16, 2018.

Almanac

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URL: www.upenn.edu/almanac

The University of Pennsylvania's journal of record, opinion and news is published Tuesdays during the academic year, and as needed during summer and holiday breaks. Its electronic editions on the Internet (accessible through the Penn website) include HTML, Acrobat and mobile versions of the print edition, and interim information may be posted in electronic-only form. Guidelines for readers and contributors are available on request and online.

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Use of Activity Trackers by Low-Income and Elderly

More people in the U.S. are using activity trackers than ever, but those who could benefit the most aren't using them. Researchers at Penn's Perelman School of Medicine, conducting the first national study of a large, diverse population on the topic, found that 1.2 percent of the study population used activity trackers such as FitBits and Apple devices. While use among younger individuals was 2.8 to 3.1 percent, only 0.1 percent of those over age 65, used them. Use of devices was also lower among individuals with annual incomes under \$50,000, with usage rates at 0.7 to 1 percent. "We found that though use grew over time, it really varied depending on individual characteristics like age and income," said Mitesh Patel, director of Penn Medicine's Nudge Unit and assistant professor of medicine and health care management. The authors of the study suggest that more effort must be made to initially engage senior citizens and low-income users with activity trackers.

Initially engaging users is important; once people begin using activity trackers, rates of continued use are high. "Once someone started using an activity tracker, sustained use at six months was high, at 80 percent," Dr. Patel said. Some devices use strategies like gamification with levels, points and badges to keep users engaged. "Our findings provide initial evidence that these types of engagement strategies may show promise for keeping sustained use high," Dr. Patel said.

In the study, researchers analyzed data from subscribers of a national health and wellness organization from 2014-2015, tracking how often the devices were used following activation, when the devices were activated, average daily step counts and socio-demographic characteristics. Penn co-authors on the study include Gregory W. Kurtzman, Charles A. L. Rareshide, Jingsan Zhu and Wenli Wang; Luca Foschini is also co-author.

Impact of Uber on Crashes Varies Based on Location

The ride sharing service Uber alleges that its services reduce drunk driving, but the effects of Uber on overall rates of car crashes and injuries are unclear. A new study from researchers at Penn's Perelman School of Medicine reports that these services have lowered drunk driving crashes in some cities, but the data varies widely based on the specific city studied, due to the different ways local residents use roadways. For example, the study found that crashes involving alcohol decreased as Uber resumed services in Portland and San Antonio, but not Reno. "This research suggests the technology is likely to affect crashes, particularly alcohol-involved crashes, differently from city to city," said Christopher Morrison, a postdoctoral fellow in biostatistics, epidemiology and informatics. Researchers found no evidence that Uber lowered the number of injuries from car accidents or serious crashes.

The Penn team studied State Department of Transportation data from all cities in which Uber launched, ceased and later resumed operations. Researchers analyzed the total number of crashes per week as well as rates of alcohol-involved crashes in these cities. The study was funded by a grant from the National Center for Injury Control and Prevention, Centers for Disease Control and Prevention. Authors of the paper include Douglas J. Wiebe, Christopher Morrison, Sara F. Jacoby, Beidi Dong and M. Kit Delgado.

Region of Brain that Motivates Behavior Change

Penn researcher Michael Platt and colleagues from Yale and Duke have discovered the region of the brain that increases neuron firing rates just before divergent behavior occurs: the posterior cingulate cortex. In their study, the researchers observed the effect of two experiments, named the patch-leaving task and the traveling salesman, on rhesus macaques.

In the first test, Dr. Platt, the James S. Riepe University Professor in Penn's psychology, neuroscience and marketing departments, and his colleagues gave the macaques the choice between harvesting juice that depleted overtime but was immediate and guaranteed or moving to a new "patch" that offered a potentially larger reward but required more time and energy.

In the "traveling salesman" experiment, macaques had the option of visiting six different locations, two of which contained different-sized rewards. The locations containing rewards were randomized and changed each time the experiment ran. "The optimal solution is to develop a routine where you visit all of them in a circle. That's the best you can do; you go from nearest neighbor to next neighbor. That's what monkeys do in the wild," Dr. Platt said. "Occasionally, these animals break off to explore for something that might be better, kind of like what people do in a grocery store. Suddenly monkeys here would break off and out of order. We didn't know why."

While observing the macaques' behavior in both experiments, researchers recorded neuron behavior in the posterior cingulate cortex. Neural activity in the area built up, peaking just before the animals changed behavior. This provides evidence that this increase in brain function leads to divergent action and thinking. "If you increased activity in the area exogenously, if I put an electrode in there and stimulated, then you would break off from the routing, you would become more exploratory," Dr. Platt said. "Similarly, if you could suppress activity, you'd see the opposite. You'd become hyper-focused on one option, and you may never make a change."

Penn Study Finds Genes Affecting Human Skin Color

Until now, most studies of genes impacting human skin color have focused on European populations, but a study from University of Pennsylvania geneticists has identified genetic variants associated with skin pigmentation in a range of diverse groups in Africa. Their findings can help explain the genetics associated with conditions like skin cancer and vitiligo, as well as the history of human evolution.

"We have identified new genetic variants that contribute to the genetic basis of one of the most strikingly variable traits in modern humans," said Sarah Tishkoff, senior author of the study and a PIK Professor and the David and Lyn Silfen University Professor in Genetics and Biology with appointments in the Perelman School of Medicine and SAS. "When people think of skin color in Africa most would think of darker skin, but we show that within Africa there is a huge amount of variation, ranging from skin as light as some Asians to the darkest skin on a global level and everything in between. We identify genetic variants affecting these traits and show that mutations influencing light and dark skin have been around for a long time, since before the origin of modern humans."

Dr. Tishkoff and her colleagues used a color meter to measure the light reflectance of the skin from the inside of the arms of more than 2,000 Africans. The measurements produced can be used to infer levels of the skin pigment melanin. Researchers took measurements from ethnically and genetically diverse populations, obtaining a range of different measurements: the lightest skin was observed in San populations in southern Africa and the darkest skin in Nilo-Saharan populations in eastern Africa.

The researchers also obtained genetic information, examining over four million single nucleotide polymorphisms across the genome from nearly 1,600 people. Using this dataset, researchers did a genome-wide association study, finding four key areas of the genome where variation was closely correlated with skin color differences.

The strongest associations were found in the region in and around the *SLC24A5* gene, one variant of which is believed to have arisen more than 30,000 years ago and plays a role in the light skin colors found in European and some southern Asian populations. This variant was common in Ethiopian and Tanzanian populations which are known to have southeast Asian and Middle Eastern ancestry, suggesting that the variant may have been carried into Africa through those populations.

The second strongest association was found with the region containing the *MFSD12* gene, which is expressed at low levels in depigmented areas of the skin in individuals with vitiligo, a condition where skin loses pigment in some areas.

Researchers found that mutations in and around this gene that were associated with dark pigmentation were present at high frequencies in Nilo-Saharan populations, and across sub-Saharan populations who tend to have darker skin. They also found three variants in South Asian Indian and Australo-Melanesian populations, who tend to have the darkest skin coloration outside of Africa.

"Our data are consistent with a proposed early migration event of modern humans out of Africa along the southern coast of Asia and into Australo-Melanesia and a secondary migration event into other regions," said Dr. Tishkoff. "However, it is also possible that there was a single African source population that contained genetic variants associated with both light and dark skin and that the variants associated with dark pigmentation were maintained only in South Asians and Australo-Melanesians and lost in other Eurasians due to natural selection."

The *MFSD12* gene is highly expressed in the cells that produce melanin. To verify the gene's role in contributing to skin pigmentation, the researchers blocked expression of *MFSD12* in cells in culture and found an increase in production of the pigment type responsible for brown and black hair, skin and eye color. Knocking out the gene in zebrafish caused a loss of cells that produce yellow pigment, and knocking out the gene in mice changed the color of their coat from agouti, caused by hairs with a red and yellow pigment, to a uniform gray by eliminating production of pheomelanin, a pigment also found in humans.

Michael Marks, a professor in pathology & laboratory medicine and physiology at CHOP and at Penn Medicine, collaborated in the study. He demonstrated that unlike other pigmentation genes, which are expressed mainly in melanosomes, the organelles where melanin is produced, the *MFSD12* gene is expressed in lysosomes, the organelles that produce eumelanin.

Finally, researchers found that genes in a region associated with skin pigmentation also play a role in melanoma risk and ultraviolet response. *DDBI*, a gene involved in repairing DNA after UV exposure, is thought to be involved.

"Africans don't get melanoma very often," Dr. Tishkoff said. "The variants near these genes are highest in populations who live in areas of the highest ultraviolet light intensity, so it makes sense that they may be playing a role in UV protection."