

SYNERGY



BECKMAN INSTITUTE

FOR ADVANCED SCIENCE AND TECHNOLOGY

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\$5 Million Gift Honors Theodore Brown and Arnold Beckman

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See page 2 for details.

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The Arnold and Mabel Beckman Foundation, founded by University of Illinois at Urbana-Champaign alumnus Dr. Arnold O. Beckman, presented the Beckman Institute for Advanced Science and Technology with a \$5 million gift to establish the Beckman-Brown Interdisciplinary Postdoctoral Fellowship and the Annual Beckman-Brown Lecture on Interdisciplinary Science.

“We are grateful for this gift from the Beckman Foundation, which continues Arnold Beckman’s legacy of innovative interdisciplinary science,” said Barbara Wilson, acting chancellor at Illinois. “This gift enables the next generation of researchers to continue to enhance research across multiple fields, as Beckman and Ted Brown had envisioned more than 25 years ago.”

The gift honors Arnold and Mabel Beckman, who in 1985 provided a gift of \$40 million to create the Beckman Institute for Advanced Science and Technology on the Illinois campus. The gift was the largest donation to a public university at that time.

The gift also honors Theodore “Ted” Brown, the founding director of the Beckman Institute. Brown co-wrote the initial proposal for an interdisciplinary research institute, which incorporated many features and organizational concepts new to academia at that time. Brown and Beckman were instrumental in achieving the vision of presenting an innovative space in which disciplines, ranging from the physical and life sciences and engineering to social and behavioral sciences, could not only co-exist but meld together to initiate and pursue innovative interdisciplinary projects of unprecedented scope.

The Beckman-Brown Interdisciplinary Postdoctoral Fellowship will provide for three-year fellowships to postdoctoral students affiliated with the Beckman Institute, beginning with the class of 2016. In the spring of 2016, the Beckman-Brown Lecture on Interdisciplinary Science will feature world-class leaders in interdisciplinary science.

“This generous endowment by the Beckman Foundation further underscores the importance of world-class interdisciplinary research and the vision of Drs. Beckman and Brown to make the Beckman Institute at the University of Illinois a world leader,” said Art Kramer, director of the Beckman Institute.

“We are truly pleased to be able to honor the significant achievements of these two great scientists with this gift, and to help continue the support of outstanding postdoctoral fellows in interdisciplinary research at the Beckman Institute,” said Anne Hultgren, executive director of the Arnold and Mabel Beckman Foundation.

ABOUT THEODORE BROWN AND ARNOLD O. BECKMAN

During his years as a member of the faculty at the University of Illinois, Brown enjoyed a multifaceted career as a research scholar, author, administrator, and teacher. After earning his Ph.D. from Michigan State University in 1956, Brown joined the faculty of the Department of Chemistry at Illinois in the same year.

He earned numerous awards and served in other important roles on the University of Illinois campus, including vice chancellor for research and dean of the Graduate College (1980–1986) and interim vice chancellor for academic affairs (1992–1993) before retiring in 1993. In addition to his roles as interim director and then director of the Beckman Institute at Illinois, he also served as a member of the Board of Directors of the Arnold and Mabel Beckman Foundation during 1994–2008.

His research interests include inorganic and organometallic chemistry, with an emphasis on the kinetics and mechanism of reactions. However, following his retirement, his interests shifted to the cognitive, philosophical, and social aspects of the scientific

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—Art Kramer, Beckman Institute Director

enterprise, reflecting his experiences at the Beckman Institute. Brown has written several books, including *Making Truth: Metaphor in Science* (2003) and *Imperfect Oracle: The Authority and Moral Authority of Science in Society* (2009). He is co-author of the general chemistry text *Chemistry: The Central Science*, originally published in 1977 and now in its 13th edition.

Beckman is an alumnus of the University of Illinois, receiving a bachelor’s degree in chemical engineering in 1922 and a master’s degree in physical chemistry in 1923. He joined the faculty of the California Institute of Technology in 1928 after receiving a Ph.D. in chemistry from that institution. In 1934, at the request of a friend, Beckman invented a portable meter for measuring the acidity of California lemons. Scientists working in a variety of fields quickly recognized the importance of the “Beckman



Arnold Beckman, left, toured the Beckman Institute with Ted Brown shortly after it opened in 1989.

Below left, Brown was presented with a plaque by Harry Gray, of the Beckman Foundation Board, to commemorate the fellowship and lecture series established in Brown and Beckman's honor.

Below right, Brown was joined by his family at a dinner on September 9, 2015, at the Beckman Institute to celebrate the gift from the Beckman Foundation Board.



acidimeter.” The pH meter, as it came to be called, was the first of a series of successful inventions that made possible a revolution in scientific instrumentation. National Technical Laboratories was founded in 1935 (and renamed Beckman Instruments, Inc., in 1950), and pioneering advances in measurement technology soon followed. These included the helipot, a precision electrical resistance device, and the DU spectrophotometer, which measured visible and ultraviolet light transmission. In 1982, Beckman Instruments merged with the SmithKline Corporation to form SmithKline Beckman.

By 1989, SmithKline had decided that Beckman Instruments’ business did not fit with their corporation, and it was spun off again as Beckman Instruments. In 1997, Beckman Instruments merged with Coulter Corporation of Miami, another leader in biomedical instrumentation, to form Beckman Coulter Corporation. As Beckman’s instrument empire evolved beyond his personal control, he became free to devote more time to his philanthropic activities.

Beckman and his wife Mabel contributed nearly \$350 million to the advancement of research and education. Throughout her life, Mrs. Beckman was deeply involved in Beckman Instruments, Inc., and shared Dr. Beckman’s devotion to philanthropic causes.

The Beckman Institute for Advanced Science and Technology at the University of Illinois is a fine example of their generosity, and other testaments to the Beckmans’ beneficence can be seen in the creation of the Beckman Institute at the California Institute of Technology, the Beckman Laser Institute at the University of California at Irvine, Stanford University’s Beckman Center for Molecular and Genetic Engineering, the Center for the History of Chemistry at the University of Pennsylvania, and Beckman Research Institute at the City of Hope, an institute dedicated to the prevention and cure of life-threatening diseases.



3D Scanner and Printer Enable Better Wheelchair Racing Gloves

The 3D scanner in Beckman's Visualization Laboratory is helping create new racing gloves for the Illinois wheelchair track team.

Arielle Rausin, an undergraduate student in the College of Business, toured the Visualization Laboratory (Vis Lab) at the Beckman Institute as part of a class that encouraged students to create objects with a 3D printer at the Illinois Maker Lab.

During her training as a member of the Illinois wheelchair track team, she realized that her project for the class could help her with her sport. Athletes use custom racing gloves that help them rotate the wheels of the specialized racing chairs. These gloves come at a price: Rausin's first gloves were \$350, took nearly 12 hours to make, and involved melting plastic and then molding them to custom-fit her hands.

"I thought, 'Wouldn't it be cool if I could replicate these gloves without having to go through this long and expensive process?'" said Rausin, who is currently training to qualify for the 2016 Summer Olympics in Rio.

With the help of the 3D scanner in the Vis Lab, Rausin created 3D-printed custom wheelchair racing gloves that are lighter, cheaper, and take less time to make than the standard racing gloves.

"I took one of my gloves, scanned it using the 3D scanner at the Vis Lab to make a digital file of it, and then used a MakerBot 3D printer to replicate it," said Rausin.

With the scanned digital file of the glove, Rausin is able to make unlimited copies for \$4 per glove. Even better, she says, is that the material used in the printing and the way the glove is printed can improve an athlete's performance.

"One of the best things about the material is that it's lightweight—over 100 grams less than the other plastic used in standard gloves," said Rausin. "That's really important because when we're climbing hills or doing normal strokes, it's much easier to push with lighter gloves and puts less strain on our muscles."

The 3D printer uses a honeycomb structure that makes the glove light and durable.

"The honeycomb structure gives it support while allowing for minimal weight and minimal material cost," said Travis Ross, manager of the Vis Lab. "The array of hollow cells formed between thin vertical walls gives inner strength."

To use the gloves, racers look at the wheel like a clock. They make contact with a metal ring on the wheel that fits into a groove in the glove at 1 o'clock, drive to 4 o'clock, and when they reach 5 or 6 o'clock, they flick their wrists to send the peg back up to 1 o'clock and repeat the cycle. Competitive racers can do this motion about two times a second.

People work on perfecting their stroke for years, so having a good glove really matters. A lighter glove might also help with repeated motion injuries that many wheelchair racers get.

—Arielle Rausin

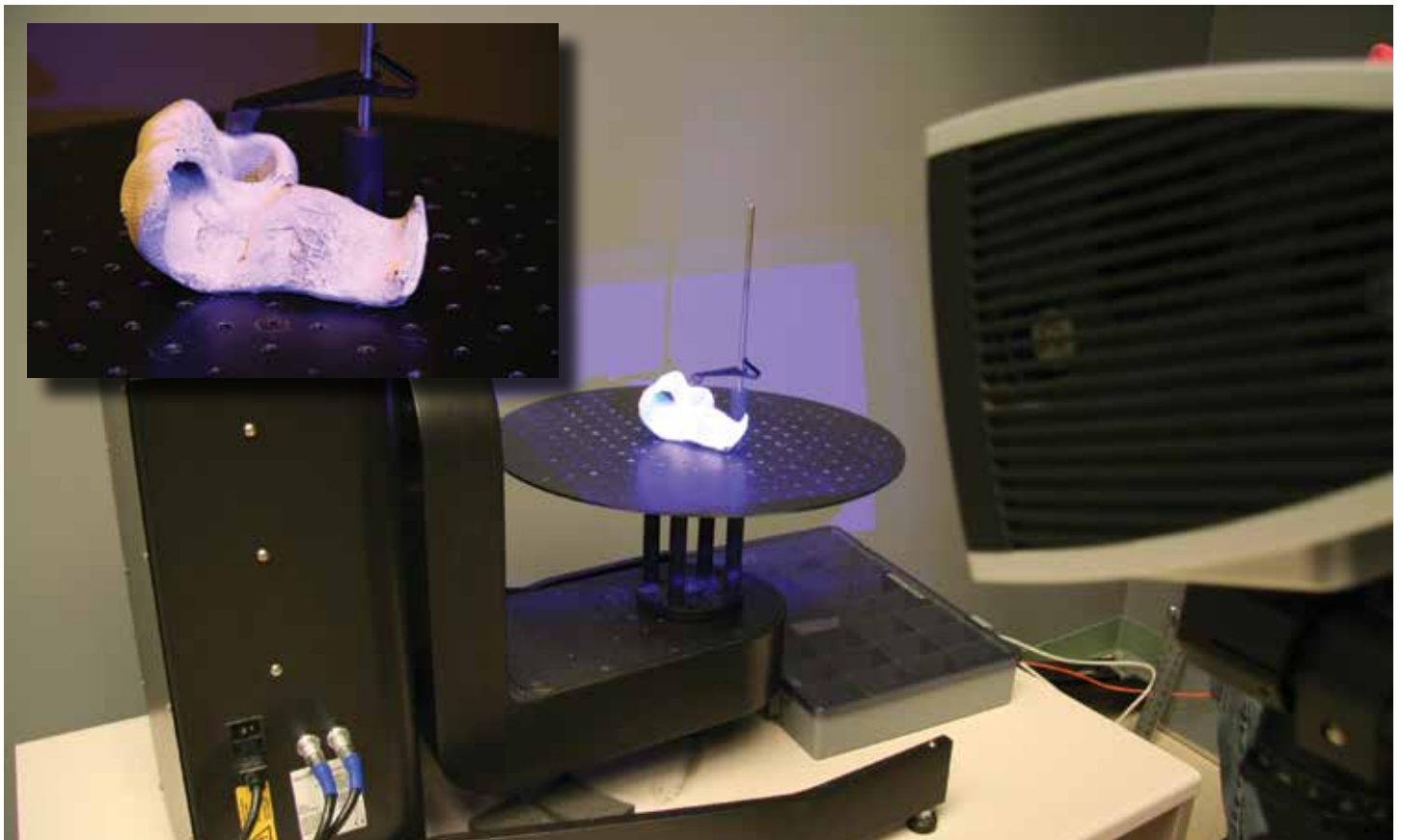
“People work on perfecting their stroke for years, so having a good glove really matters. A lighter glove might also help with repeated motion injuries that many wheelchair racers get,” said Rausin. “My teammates were skeptical—they thought the lighter weight would be breakable. So they threw it on the wall of the gym and some of the bigger guys were trying to break it in half. They couldn’t.”

Rausin and Ross are working with Deana McDonagh, industrial design professor and Beckman faculty member in the Human Perception and Performance Group, to advance the process even

further. Instead of scanning an existing glove, the team hopes to design a process that could scan someone’s hand and make a glove based on their exact hand structure. This would eliminate the need to scan an expensive, custom glove.

“The sport is growing,” said Rausin. “If it was easy to make and produce these gloves, it might be one less barrier people have to enter into wheelchair racing.”

Top left, using specialized gloves she made with a 3D printer, Arielle Rausin pushes the pegs of her racing chair alongside her Illinois wheelchair track coach, Adam Bleakney. Below, with the help of Beckman’s Visualization Laboratory, Rausin scanned her original gloves to make a 3D digital file, and then used the file to 3D print the gloves with a MakerBot from the Illinois Maker Lab. Her new gloves are lighter, cheaper, and take less time to make than standard racing gloves.



Prosthetic Hand Develops Sensory Feedback

A low-cost prosthetic hand developed by Aadeel Akhtar and Timothy Bretl has the potential to help amputees around the world.

Building a viable prosthetic hand—one that users can trust and integrate into their daily lives—requires that they recognize they have a hand without looking at it. When a user pulls open a door without looking at it, he or she needs to know where each finger is and feel the pressure of the door.

Touch feedback and joint location sensing, known as proprioception, are two key developments in the prototypes for a prosthetic hand developed in the lab of Tim Bretl, an associate professor in aerospace engineering and Beckman faculty member in the Artificial Intelligence Group. The project is led by Aadeel Akhtar, an M.D./Ph.D. candidate in neuroscience.

“Commercial prosthetic hands are severely limited in providing sensory feedback,” said Akhtar, who started working on developing prosthetics in 2013, and has been working on incorporating sensory feedback after the group traveled to Ecuador last summer to test on Juan Suquillo, a patient with a below-elbow amputation sustained during a war injury.

“We have a prototype finger now that has a pressure sensor built in. When you press the finger down, a correlating amount of electrical current will be sent through and across your skin, and your brain will perceive it as an actual feeling. The harder you push down, the stronger the sensation feels.”

Even though the sensation currents are sent through the forearm, Akhtar said the brain is remarkably adaptable and will rewire to associate the sensations in the forearm with movement in the fingers.

“The brain is plastic and will rewire itself pretty readily,” said Akhtar. “Prior studies have shown that your brain will start to think it’s your finger that’s feeling it, rather than your forearm.”

The mechanism used to generate the electrical current in the forearm currently requires a power supply connected to a wall outlet. But their newest prototype is battery operated and has been reduced to the size of a credit card, allowing the researchers to embed all of the electronics into the socket between the prosthetic and the arm.

The group also implemented joint sensing into the latest prototype. When users can’t feel how their joints are moving, they often abandon their prosthesis, says Akhtar.

“If you have a prosthetic device, when your eyes are closed and you move it around, you have no idea where it is,” said Akhtar. “That’s a huge problem. In order for people to use their prosthetic, they have to constantly look at it, and because of that, they’ll just use their other hand, often abandoning the prosthetic entirely.”

To combat this problem, the researchers have developed a cost-effective solution. A small contact pad adhered to the skin connects to the finger via a wire that will stretch the skin an amount proportional to the angle of the finger when it moves.

“Through this skin-stretching mechanism, we give proprioception back to the user in a way that is inexpensive, simple, and intuitive. We can apply this mechanism to any existing prosthesis, and we have plans to integrate it with prostheses not only in the United States, but in developing countries as well,” said Akhtar.

We have a prototype finger now that has a pressure sensor built in. When you press the finger down, a correlating amount of electrical current will be sent through and across your skin, and your brain will perceive it as an actual feeling.

—Aadeel Akhtar

Akhtar and one of his undergraduate students in mechanical science and engineering, Patrick Slade, plan to launch a start-up called PSYONIC to sell their prosthetic for \$1,000–3,000—a fraction of the cost of prosthetics on the market today, which typically range from \$30,000–40,000. This low cost will make it especially accessible to people in developing countries. The group won the overall \$15,000 grand prize, as well as the \$10,000 Samsung Research Innovation grand prize, in the Cozad New Venture Competition, a program at the University of Illinois designed to encourage students to create new businesses.

To create a stronger and more durable prosthetic, the group will switch from 3D printing and implement injection molding in the

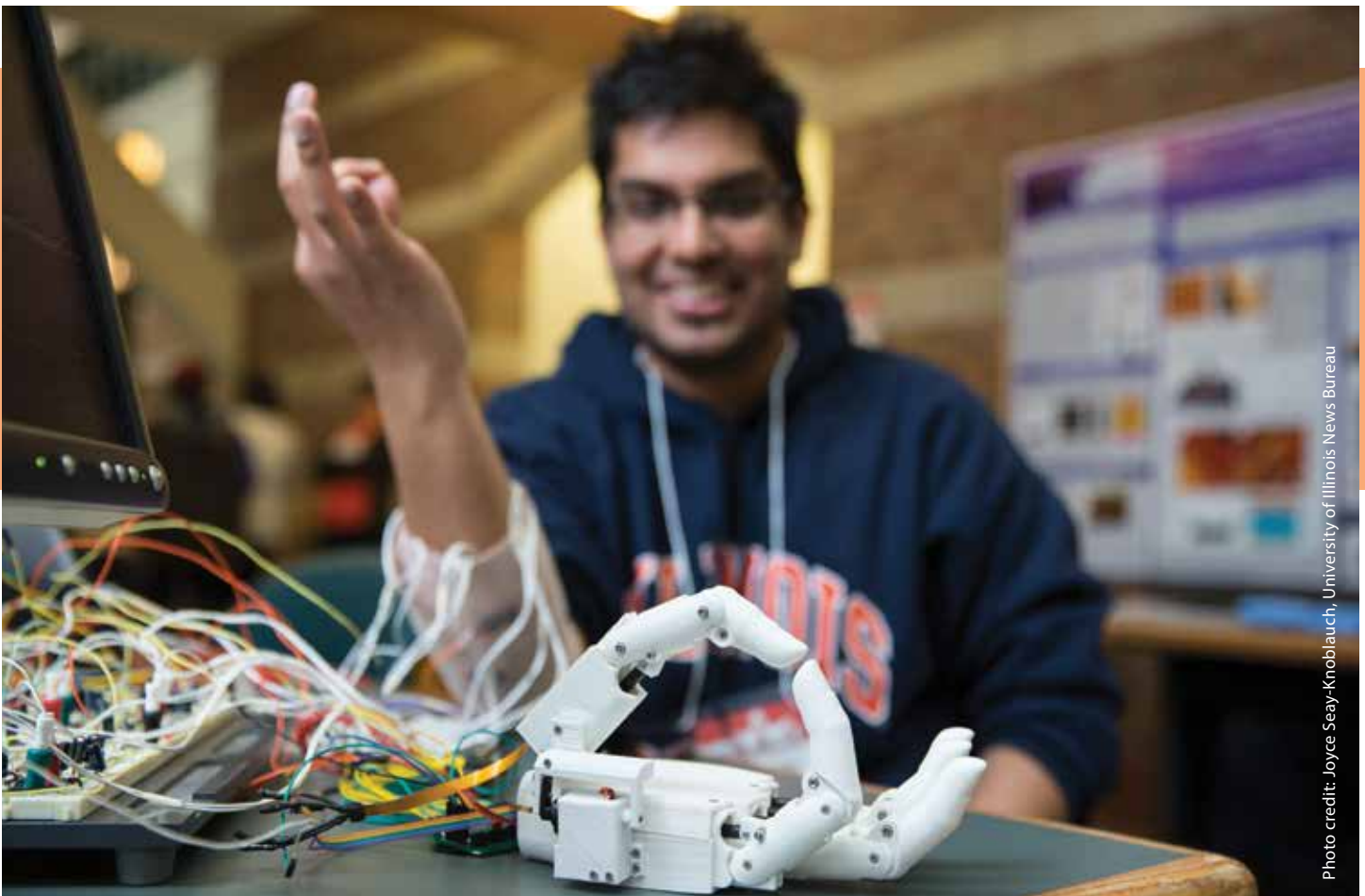


Photo credit: Joyce Seay-Knoblach, University of Illinois News Bureau



Top, Aadeel Akhtar, a M.D./Ph.D. student, showcased his prosthetic hand device at the 2015 Beckman Institute Open House. The device incorporates sensory feedback, allowing users to sense the movement and pressure of the hand. Bottom, with his start-up PSYONIC, Akhtar is working to be able to distribute prosthetic hands around the world.

manufacturing process, which infuses heated material into the plastic mold. They will also use rubber on the outside of the hand to absorb impact and mold over the sensors used for feedback.

Many of these changes to the prototypes were built with design in mind. The group wanted to make the prosthetic more anthropomorphic—to look and feel like a normal human hand.

Akhtar has been working with Cliff Shin, an assistant professor in industrial design and member of Beckman's Cognitive Neuroscience Group, to build a model that looks more aesthetically pleasing, with the hope that it is more readily accepted by users. It also has a smooth surface that will allow users to put on silicon gloves to match their skin tone.

After PSYONIC launches, Akhtar hopes the group, comprised of disciplines ranging from computer engineering to graphic design, will be selling their low-cost prosthetic hand to those in need.

Those involved in the group include: Tim Bretl, associate professor, aerospace engineering; Mary Nguyen, M.S. student, aerospace engineering; Patrick Slade, mechanical science and engineering junior; Joseph Sombeck, bioengineering junior; Jesse Cornman, computer engineering sophomore; Michael Fatina, computer engineering sophomore; Edward Wu, computer engineering sophomore; Alvin Wu, computer engineering sophomore; Sam Goldfinger, electrical engineering senior; Daniel Gonzales, electrical engineering sophomore; Hafsa Siddiqui, graphic design senior; and Liz Ochoa-Raya, molecular and cellular biology senior.



2015 Beckman Awards Meet the Awardees

Nine students received Beckman awards at the annual student awards reception. From left, Emily Cullum, Jia-Bin Huang, Jamila Hedhli, Shamira Sridharan, Vice Chancellor for Research Peter Schiffer, Beckman Director Art Kramer, Kathleen Maigler, Elizabeth Grogan, Madison Barker, Jessie Chin, and Emily Matijevich.

On Saturday, May 2, 2015, nine students were honored for receiving one of the five annual Beckman student awards. These awards allow students to conduct research at the Beckman Institute in a range of disciplines. During the reception, the families of Erik Haferkamp, Nadine Barrie Smith, and Tom and Margaret Huang were able to meet the awardees, their parents, and their faculty advisors.

Erik Haferkamp Memorial Award for Undergraduate Research

Madison Barker is the recipient of the Erik Haferkamp Memorial Award for Undergraduate Research. Madison is a junior in molecular and cellular biology and is working with Justin Rhodes, of the NeuroTech Group, in his Behavioral Genetics Laboratory. Her research project investigates the development of novel optogenetics techniques to understand the role of new hippocampal neurons in learning and memory. Madison is also a Chancellor's Scholar in the Campus Honors Program.

Nadine Barrie Smith Memorial Fellowship

Jamila Hedhli and **Shamira Sridharan** were named the 2015 Nadine Barrie Smith Fellows. Jamila, who works with Wawrzyniec Dobrucki from the Bioimaging Science and Technology Group, will obtain her Ph.D. in bioengineering. Her research focuses on

the development of stem cells therapies for the treatment of cardiovascular complications associated with diabetes.

Shamira is pursuing her Ph.D. in bioengineering and works with Gabriel Popescu, from the Bioimaging Science and Technology Group. Her work explores innovative quantitative techniques for prognosticating prostate cancer and diagnosing colon cancer.

Thomas and Margaret Huang Award for Graduate Research

Jessie Chin and **Jia-Bin Huang** received awards in honor of Thomas and Margaret Huang. Jessie explores information search and self-regulation across the lifespan. She is pursuing her Ph.D. in educational psychology and has worked with Dan Morrow, Elizabeth Stine-Morrow, and Wai-Tat Fu, all from the Human Perception and Performance Group. Jessie was also a Beckman Graduate Fellow in 2011–2012.

Jia-Bin will earn his Ph.D. in electrical and computer engineering and is working with Narendra Ahuja from the Artificial Intelligence Group. His research is in the area of computer vision, specifically in the novel use of physically grounded constraints for solving inverse problems in image and video processing.

Janssen Family Undergraduate Research Award

Elizabeth Grogan and **Kathleen Maigler** were selected for the inaugural Janssen Family Undergraduate Research Award.

Elizabeth is an undergraduate research assistant in Justin Rhodes' lab, of the NeuroTech Group, where she has developed her research interests in neurogenesis, psychopharmacology, and hyperactivity. She is pursuing a double major in molecular and cellular biology and psychology.

Kathleen is working toward a degree in molecular and cellular biology. In Dan Llano's lab, in the NeuroTech Group, Kathleen characterizes the anatomical circuitry underlying multisensory integration in the mouse auditory midbrain.

Carle Neuroscience Institute Undergraduate Research Award

Emily Cullum and **Emily Matijevich** are the inaugural Carle Neuroscience Institute Undergraduate Research Awardees. Cullum is a junior bioengineering student and a Chancellor's Scholar in the Campus Honors Program. As a research assistant in the lab of Sua Myong, she uses single-molecule fluorescence microscopy to examine DNA structures to elucidate possible genetic causes of cancer.

Matijevich is an undergraduate research assistant in Elizabeth Hsiao-Weckler's lab, in the Artificial Intelligence Group, where she investigates the use of a pneumatically powered ankle foot orthosis to restore a normal walking gait in patients with multiple sclerosis or ankle injury. She is pursuing a degree in bioengineering with a biomechanics concentration.

Beckman Institute 2015 Open House

The biennial Open House on March 13–14, 2015, showcased over 40 labs, facilities, and research projects at the Beckman Institute. Attendees interacted with the technology and programs used for research and experiments, giving them an opportunity to experience the research at the Beckman Institute firsthand.

The Microscopy Suite staff demonstrated the fluorescence microscope, x-ray microcomputed tomography instruments, and the field-emission scanning electron microscope using a Bugscope sample. The Visualization Laboratory showcased their updated 3D scanning and macrophotography abilities. The Biomedical Imaging Center let visitors explore their various labs, including the 14.1 T Inova Microimaging Scanner and the Siemens MicroPET/SPECT/CT scanner. Visitors tested their skills on flight and driving simulators provided by the Illinois Simulator Laboratory.

Children were encouraged to play brain games in order to sample and understand how brain-machine interfaces work. They also got

to see real mouse and fish brains, get a sense of the size of brains of different animals, learn the parts of a neuron, and see how human brains react to brain teasers.

A popular display was the 3D printing of a prosthetic hand, which can be made for less than \$1,000 (see page 6). Bert, the iCub robot, which moves its head, arms, hands, waist, and legs, and can see and hear, was also popular with visitors.

The Self-Healing and Sustainability Group showed off “smart” materials, which are inspired by nature and help create an exciting array of new self-healing and sustainable technologies. Justin Rhodes’ lab had clownfish on display, and visitors could learn more about their unique social behavior. A 3D journey across the molecules that build all living organisms allowed attendees to experience shape-shifting proteins, insidious viruses, and the intricate chlorophyllosophy of bacteria leaping off the screen one atom at a time.



Honors & Awards



Johnson Receives AHSA Award

Aaron Johnson, of the Bioimaging Science and Technology Group and assistant professor of speech and hearing science, received a 2014 New Investigator Research Award from the American Speech-Language-Hearing Foundation. His project is entitled “Laryngeal Neuromuscular Response to Vocal Exercise.”



Cheng, Bhargava Chosen as AIMBE Fellows

The American Institute for Medical and Biological Engineering (AIMBE) chose Jianjun Cheng (top left), of the Bioimaging Science and Technology Group and associate professor of materials science and engineering, and Rohit Bhargava (bottom left), of the Bioimaging Science and Technology Group and professor of bioengineering, as AIMBE Fellows. The College of Fellows is comprised of the top two percent of medical and biological engineers in the country. Cheng was chosen “for outstanding contribution to the development of polymeric biomaterials and translational nanomedicine.” Bhargava was honored “for pioneering the development of chemical imaging technology and the use of optical spectroscopic methods for digital pathology.”



Suslick Receives Innovation Transfer Award

Kenneth Suslick, of the Bioimaging Science and Technology Group and professor of chemistry, received the Innovation Transfer Award at the 2015 Innovation Celebration. The Innovation Transfer Award is awarded to a group or individual from the University of Illinois “whose research has resulted in either a discovery or a work with the potential for significant societal impact.” Suslick was recognized for his work on an “optoelectronic nose—a way of detecting different chemicals, different odors, based on the response of an array of optical sensors.”



Cunningham Invested as Willett Professor

Brian Cunningham, of the Nanoelectronics and Nanomaterials Group and professor of electrical and computer engineering, was invested as a Donald Biggar Willett Professor of Engineering in a ceremony on February 26 at the Illinois campus. The professorship recognizes Cunningham’s intellectual leadership and outstanding research.



Schulten Delivers National Lecture for Biophysical Society

Klaus Schulten, of the Theoretical and Computational Biophysics Group and professor of physics, delivered the National Lecture at the 59th Annual Meeting of the Biophysical Society in Baltimore, the highest award given each year by the Biophysical Society. The topic of Schulten’s talk was “Discoveries in Biophysics Through the Computational Microscope,” in which he stressed that computation is now a tool for discovery, encompassing systems ranging from individual proteins, to larger complexes like the ribosome and the HIV virus capsid, all the way to a massive molecular machine—the photosynthetic chromatophore.



Pan Named to Board of *Molecular Pharmaceutics*

Dipanjan Pan, of the Bioimaging Science and Technology Group and assistant professor of bioengineering, was asked to join the editorial advisory board of *Molecular Pharmaceutics*. The journal covers the molecular pharmaceutics and drug delivery fields.



Barbey Receives Editor Award

Aron Barbey, of the Cognitive Neuroscience Group and assistant professor of speech and hearing science, recently received an “Outstanding Associate Editor Award” from *Frontiers in Human Neuroscience*.



Gillette Named Director of Neuroscience Program

Martha Gillette, of the NeuroTech Group and professor of cell and developmental biology, has been named the director of the Neuroscience Program in the College of Liberal Arts and Science at the University of Illinois. Gillette is a world-renowned scholar who has mentored more than 50 graduate and postdoctoral trainees. She served as head of the Department of Cell and Structural/Developmental Biology from 1998–2008.



Kramer Serving on National Panel on Aging and Technology

Arthur Kramer, director of the Beckman Institute and professor of psychology and neuroscience, has been invited to serve on a panel of the President’s Council of Advisors on Science and Technology that deals with “Aging and Technology.” The goal of the committee is to provide recommendations to the president about how technology might be best used to aid older adults.



Imoukhuede Named Young Innovator

Princess Imoukhuede, of the Bioimaging Science and Technology Group and assistant professor in bioengineering, has been named a 2105 Young Innovator of Cellular and Molecular Bioengineering for her work focusing on the endothelial receptor numbers VEGFRs, NRP1, and PDGFRs. This research demonstrates there is a cross-talk between receptor classes and lays a solid foundation for the development of more accurate, complex computational models to describe the factors driving angiogenesis. She will present a lecture at the Biomedical Engineering Society meeting in Tampa in October.



Johnson Named 2015 ISMRM Junior Fellow

Curtis Johnson, the assistant director for magnetic resonance operations in the Biomedical Imaging Center, was named a 2015 ISMRM Junior Fellow. This award, given by the International Society of Magnetic Resonance in Medicine (ISMRM), recognizes “outstanding researchers at an early stage in their careers, with an established and long-term commitment to ISMRM.” With this fellowship, Johnson has the opportunity to work with a mentor in ISMRM for a year to further his research in elastography, a magnetic resonance imaging technique used to determine the elasticity of soft tissues in the body.



Roth Named Linowes Faculty Fellow

Dan Roth, of the Artificial Intelligence Group and professor of computer science, has been named a 2015–2016 David E. Linowes Faculty Fellow by the Cline Center for Democracy at Illinois. As a Fellow, Roth plans to expand the long-term partnership between the Cline Center and the Cognitive Computation Group by developing machine-learning based tools for transforming the raw natural language of news text into structured data about civil unrest and political violence.



Aksimentiev Receives NCSA Fellowship

Aleksei Aksimentiev, of the Nanoelectronics and Nanomaterials Group and associate professor of physics, has been selected to receive a one-year NCSA Fellowship for 2015–2016. His collaborative project is entitled “Patchwork Molecular Dynamics: A New Paradigm for Hardware-Accelerated Large-Scale All-Atom Simulations of Biological Systems.”



Moore Receives Leete Award

Jeffrey Moore, of the Autonomous Materials Systems Group and professor of chemistry, has been named the 2015 recipient of the Leete Award by the American Chemical Society Division of Organic Chemistry. The Leete Award recognizes outstanding contributions to teaching and research in organic chemistry.

Beckman Faculty Elected NAS Members

Gary Dell, of the Cognitive Science Group, John Rogers, of the 3D Micro- and Nanosystems Group, Taekjip Ha, affiliate faculty member, and Cathy Murphy, of the Nanoelectronics and Nanosystems Group, have been elected to the National Academy of Sciences in recognition of their distinguished and continuing achievements in original research.



Mohaghegh Honored with Dean’s Award for Excellence In Research

Zahra Mohaghegh, of the Human Perception and Performance Group and assistant professor in nuclear, plasma, and radiological engineering, has received the 2015 Dean’s Award for Excellence in Research from the College of Engineering at Illinois. Mohaghegh has pioneered research in systematic causal modeling of the interactions of physical and social failure mechanisms and in incorporating big data analytics into probabilistic risk assessment.



Lyding Receives Feynman Prize in Nanotechnology

Joseph Lyding, of the Nanoelectronics and Nanomaterials Group and professor of electrical and computer engineering, has been named the recipient of the Foresight Institute Feynman Prize for experimental work. Lyding is a pioneer in the development of scanning tunneling microscope (STM) technology and particularly hydrogen depassivation lithography.



Liang Receives 2015 IEEE EMBS Distinguished Service Award

Zhi-Pei Liang, of the Bioimaging Science and Technology Group and professor of electrical and computer engineering, has been selected to receive the 2015 IEEE Engineering in Medicine and Biology Society (EMBS) Distinguished Service Award for “outstanding service to EMBS and the field of biomedical engineering.” The award presentation was held in August at EMBC ’15.



The 2015 Beckman Institute Graduate Fellows began their year as fellows conducting interdisciplinary work with multiple faculty members at the Beckman Institute. From left, Joanne Li, Duc Nguyen, Angela Barragan, Aki Nikolaidis, Cassandra Jacobs, Hector Lopez Hernandez, and Saumya Tiwari.

SYNERGY is a publication of the Communications Office of the Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign. Each issue spotlights the people and science that make the Institute one of the premier facilities for interdisciplinary research in the world.

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